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ABSTRACT

An analysis of the 1970 Elementary School Survey was undertaken to determine the effects of large Federal expenditures for early childhood programs. This national survey gathered data from 3,500 schools, including observations of 20,000 teachers on 80,000 students in grades 2, 4, and 6. The following comparisons were made for second, fourth, and sixth graders: (1) achievement test scores of early first-grade entrants were compared with later first-grade entrants; (2) achievement test scores of pupils from different geographic localities were analyzed; (3) teachers' observations about attitudes of disadvantaged students with and without preschool experiences were compared; and (4) teachers' observations about attitudes of disadvantaged students who were early first grade entrants and those who entered later were compared. Socioeconomic status of children's families and effects of preschool programs and/or early school entrance were examined to determine whether there were any interactions between them. Results showed that the most marked differences between any subgroups were between those identified as socioeconomically disadvantaged and those not identified as such. Those identified as not socioeconomically disadvantaged and not having preschool or kindergarten had consistently higher achievement than the opposite group. In the majority of comparisons made, there were no significant differences between groups with preschool and those without preschool. (HV)

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THE EFFECT OF EARLY SCHOOL ENTRANCE OR PRESCHOOL PROGRAMS ON THE SCHOOL ACHIEVEMENT AND ATTITUDES OF DISADVANTAGED CHILDREN

(OEO Grant #50079-G-73/01)

Hewitt Research Center
Berrien Springs, MI 49104

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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by

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TABLE OF CONTENTS

Introduction		1
Chapter I:	A Description of the Instrument, Data, and Procedures Used in Data Analysis	4
Chapter II:	Descriptive Statistics.	35
Chapter III:	Comparison of Pupils Identified As "Socioeconomically Disadvantaged" with Other Pupils.	90
Chapter IV:	Comparison of Subpopulations That Had Preschool with Those That Did Not.	128
Chapter V:	Comparison of Subpopulations That Had Kindergarten with Those That Did Not	164
Chapter VI:	Comparison of Data from Children Estimated To Be Early School Entrants with Later School Entrants	217
Chapter VII:	Limitations, Summary and Recommendations.	249
References		258

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The study has been complicated by some major problems. The first is the large quantity of missing data. The second is the use of different achievement tests by different children.

We are grateful to Dr. Robert L. Ebel at Michigan State University and Drs. Robert Cruise and Wilfred Futcher of Andrews University for suggestions that they made that gave us insights on how to deal with these problems and their implications.

Robert D. Moon, Principal Investigator

Raymond S. Moore, Project Director

INTRODUCTION

Since the data from the 1970 Elementary School Survey had been subjected to little if any analysis, except for the preparation of descriptive statistics, a proposal was submitted late in 1972 to the Office of Economic Opportunity suggesting that this data be analyzed for information concerning what effect large federal expenditures for early childhood programs may have had on this national sample. Specifically, the proposal suggested the analysis of the 1970 Elementary School Survey data in the following manner:

1. To compare second-, fourth-, and sixth-grade achievement test scores of children who were in preschool programs with the scores of children who were not in preschool programs.
2. To compare second-, fourth-, and sixth-grade achievement test scores of children indicated by data to be early first-grade entrants with later first-grade entrants.
3. To compare second-, fourth-, and sixth-grade achievement test scores of children in states having early school entrance ages with those in states having later school entrance ages.
4. To develop descriptive statistics relating to second-, fourth-, and sixth-grade achievement test scores of children in different state or other geographic localities.
5. To compare second-, fourth-, and sixth-grade teacher observations about attitudes of disadvantaged students with and without preschool experiences.

6. To compare second-, fourth-, and sixth-grade teacher observations about attitudes of disadvantaged students who were early first-grade entrants with those who entered later.
7. To determine if there were any apparent interactions between the socioeconomic status of children's families and effects of preschool programs and/or early school entrance (i.e., was there an apparent positive effect of these factors on children of families in some socioeconomic levels, while they were negative for children of families in other socioeconomic levels?).
8. To perform other appropriate analyses as the need emerged (this often occurs after initial processing).

The analysis has been complicated because of apparent inaccuracies in the data, missing data and concerns about the manner in which questions were stated. Despite these difficulties, analyses were performed that assisted in meeting objectives 2, 4, 5, 6, and 7.

Comparisons between states have not been reported because of concern about the data and the possibility that information based upon minimal data might be used in inappropriate inferences concerning the programs of various states or geographic localities. Selected descriptive statistics concerning individual states were used, however, for planning analyses to meet other objectives. When states have been identified, it has been in such a manner that comparisons cannot be made between states or between a state and the population as a whole.

Two major concerns led to the above decision. The first was the concern that the schools in the given state may not have been representative of state programs as a whole. The second concern was that different states predominantly used different achievement measurements. There was

evidence to suggest that the different measures of achievement, while supposedly having national norms, might not give equivalent results when used on similar groups. The evidence for this will be discussed later.

The report is divided into the following chapters:

1. A description of the instrument, data, and procedures used in data analysis.
2. Descriptive statistics.
3. Comparisons of pupils identified as socioeconomically disadvantaged with other pupils.
4. Comparisons of subpopulations that had preschool programs with those that did not.
5. Comparisons of subpopulations that had kindergarten with those that did not.
6. Comparisons of data from children estimated to be early school entrants with later school entrants.
7. Summary.

CHAPTER 1: A DESCRIPTION OF THE INSTRUMENT, DATA, AND PROCEDURES USED IN DATA ANALYSIS

This section will describe (1) the instrument, selected questions from the instrument that were most appropriate to this report, and problems related to the statement of some questions; (2) the data base and evidence of apparent error resulting from inaccurate recording of data or the transfer of data from the questionnaire to computer files; (3) a definition of terms; and (4) procedures used to analyze the data. The majority of simple descriptive statistics in the report will be included in the next chapter; however, some descriptive statistics will be included in this chapter to illustrate what may be evidence of apparent problems in the data base.

A Description of the Instrument

The 1970 Elementary School Survey (1969-70 school year) used four instruments to gather data from about 3,500 schools involving observations of 20,000 teachers for more than 80,000 students in grades 2, 4 and 6. The four instruments used were (1) the school district questionnaire, (2) the principal questionnaire, (3) the teacher questionnaire, and (4) the pupil questionnaire.

The data analyzed for this study came from information gathered through the pupil questionnaire. Data obtained from the school district questionnaire, principal questionnaire and teacher questionnaire were not analyzed for the following reasons:

1. They were not defined as part of the scope of this study.
2. They were beyond the financial support provided for this study.
3. The number of variables included in the school district, principal and teacher questionnaires which could be analyzed in terms of possible interactions with student achievement or attitudes were more than could be justifiably analyzed in terms of the number of student records and variables about students contained in those records. In other words, the membership of various subpopulations to be analyzed would have been determined by so many variables that many of the subpopulations would contain little, if any, data.
4. The study of equality of educational opportunity (Coleman, et al. 1966) and the follow-up analysis, On Equality of Educational Opportunity (edited by Mosteler and Moynahan, 1972), reported data that strongly suggested the minimal effect of schools or teachers on student achievement, provided there is a minimal level of educational programs existing in those schools. These reports were based on a much larger data base than the one being studied and thus allowed for a more meaningful analysis than could be accomplished with the data from the 1970 elementary school study.

It is also important to note that the instruments were primarily designed for and targeted toward schools which had various types of federal funding such as: Elementary Secondary Education Act, Titles I, II, III, V, VII, and VIII; National Defense Education Act, Title III and V-A; Vocational Education Amendments of 1968; and Civil Rights Act, Title IV. An

examination of the questionnaires indicates that considerable emphasis was placed on whether students had or had not been involved in various federally funded programs during the 1969-70 school year. Also, an attempt was made to collect "pretest" and "posttest" achievement data on students which could be used to determine whether these federal programs had affected achievement. In addition to measures of achievement, there were questions which asked teachers to estimate whether there had been changes in behavior during the current school year.

Because this study was interested in experiences which occurred and/or factors which existed prior to the 1969-70 school year, the posttest achievement data and change in attitude or behavior during the school year were considered of little relevance to the objectives of the study.

A description of selected questions relevant to the study.

The questions examined by this study can be broken into four major categories: (1) demographic data, (2) professional judgment, (3) professional observation, and (4) achievement test data. The demographic data was obtained from school records and the teachers' knowledge about the students and their families. The information labeled professional judgment represents teachers' judgments or estimates about students' attitudes, ability, maturity, etc., and about the heads of household and/or mothers' educational level.

The responses to professional observation items contain elements of both observation and judgment. The observations relate primarily to whether a student received or did not receive various types of services or whether or not these were available. The judgments relate to whether students who did not receive services needed these services. The teachers were also

asked to make observations concerning the students' manner of approaching and completing tasks.

Tables 1.1 through 1.4 show the four categories of questions with possible responses and the numeric coding used to indicate which response was given. A number of questions have subparts. Two methods have been used to identify the questions and their subparts. In some questions, a letter was used in the questionnaire to identify the subparts of the question. For example, 20a or 20b. When no letters were used for subparts, the byte location in the computer record has been included to identify the questions which had subparts. In all instances, both the question number and the record locations have been included. For example, 1.17 means question 1 with the information found in byte 17 of the computer record. 21.78,79 indicates question 21 with the information for this question found in byte 78 and 79 of the computer record.

Tables 1.1 through 1.4 have been provided so that the reader may see exactly how the questions are worded and the numeric coding for various responses. In further tables where an abbreviated form of the response or the numeric number for a response is given, the reader may find it helpful to refer back to Tables 1.1 through 1.4 to see the original form.

Problems in the statement of questions.

Some questions were worded in a way that could lead to confusion in responding to the question, or in ambiguities in the coding of information if the question was not entirely answered. This section will examine such questions.

Pupil's birth date. The question referring to the pupil's birth date requested the coder to mark the month of the birth date. Next, the year of the birth date was to be marked. Years were provided for 1950 through 1969. If a person was born in 1950, the respondent marked a location that indicated a zero in the 1950 row. If the birth year was 1958, the respondent would mark an eight in that row. Similarly, if a person was born in 1960, the zero would be marked in the 1960 row, and for 1964 the four would be marked in the 1960 row. The major problem with this question was that no response to the year information would give exactly the same results in the computer records as if 1950 or 1960 were indicated, with a zero in both byte locations. The year 1950, for all practical purposes, could be rationally eliminated because of the age range of the population. This means that the assumption must be made that if no response or a zero appears, then 1960 would be the birth year. When this assumption is made, the data appear to be meaningful. However, it does leave some question about those birth dates which were apparently in 1960 since there were a number of cases where no birth date was indicated.

Neglected or delinquent pupil. Question 12.66 requested the teachers to check if they felt that pupils were neglected or delinquent. The two terms "neglected" and "delinquent" do not seem to be meaningfully related and might lead to confusion on the part of the teacher. "Neglected" could be an attribute of the family, the guardian, the school or society, while "delinquent" could be an attribute of the student resulting perhaps, but not necessarily, from being neglected.

No basis for response. A number of questions asked teachers to make estimates. For example, question 25 stated "estimate the educational levels

of the head of this pupil's household and the pupil's mother. If the mother is the head of the household, mark the response in the column headed mother and leave the other column blank." In this question there was no place for a person to mark that they did not have a basis for making such an estimate. Approximately 15% of the questionnaires contained no information about the occupation of the head of household.

In contrast, there were other questions that did have a response to indicate that an individual did not have the information. In examining the questions, there appears to be no logical reason why opportunity was given to indicate the lack of data in one instance and not in the other. This particular question is given as an example of one of a number of such questions.

Pupil personnel service questions. Question 39 asked teachers to "indicate those personnel service activities that this pupil participated in, or has been subject of, during the 1969-70 school year. . . ." For each type of activity there were four possible responses which could be given. The responses were (1) pupil received service, (2) pupil did not receive service--pupil needed, (3) pupil did not receive service--pupil did not need, and (4) activity not available. It is possible that the data were not interpreted by all teachers in the same way. If a pupil did not need the service and the activity was not available, which response would be marked? Similarly, if the pupil needed the service and it was not available, which response would be marked? The extent to which this ambiguity skews the data for students not having the service available is uncertain.

In using this data it must be assumed that the manner in which different teachers interpreted these questions was randomly distributed across the

various subpopulations. If this was not the case, the inferences drawn from any statistics developed from these questions is in doubt. The reader may wish to examine in detail Tables 1.1 through 1.4 to get a better understanding of the particular questions examined in this study and what may have been other apparent problems in wording.

The Data Base

In addition to the ambiguity in the way in which questions were worded, the types of data collected also presented problems in the analysis. In this section, a general description will be given of the data base; evidence indicating apparent error resulting from inaccurate recording or transferring of data to computer files will be described; and issues related to the interpretation of the data will be discussed. A more detailed description of the data base will be included in the next chapter.

An overview of the data base.

The data base contained 84,822 student records representing students from 46 states and the District of Columbia. The data was obtained from approximately 3,500 schools involving observations and data collection by about 20,000 teachers.

Not nationally representative sample. This sample should not be considered a nationally representative sample for two reasons. First, not all of the states were included in the data base. Second, there was an emphasis on data from schools which participated in Title I programs which were required to provide data as a part of the funding. There was no such requirement for schools from districts without Title I funding.

Table 1.1

DEMOGRAPHIC DATA

Test Item and Record Location	Questions and response codes
0.1,2	State of residence (2 digit code to designate state recorded on school or district questionnaire.)
1a.17	In what grade or type of class is this pupil now enrolled? 1 = 2 2 = 4 3 = 6 4 = Ungraded class 5 = Ungraded class for handicapped pupils 6 = Graded class for handicapped pupils
2.19	What is this pupil's sex? 1 = Male 2 = Female
3.20-23	What are this pupil's month and year of birth? 1 = Jan, 4 = April, 7 = July, 10 = Oct 2 = Feb, 5 = May, 8 = Aug, 11 = Nov 3 = Mar, 6 = June, 9 = Sept, 12 = Dec 195- 0 1 2 3 4 5 6 7 8 9 196- 0 1 2 3 4 5 6 7 8 9
7.37	Since the beginning of the first grade how many schools, including this school, has this pupil attended? (Do not include summer schools or schools that normally feed pupils into this school; include schools in this district as well as outside of this district.) 0 = ERROR 1 = (1) 2 = (2-3) 3 = (4-6) 4 = (7-10) 5 = (More than 10) 6 = (Don't know)

8.38, 39 Which of the following school experiences did this pupil have before entering first grade?

Kindergarten:	Prekindergarten programs (nursery school, Head Start, day-care centers, etc.):
0 = ERROR	0 = ERROR
1 = Yes	1 = Yes
2 = No	2 = No
3 = Don't know	3 = Don't know

13.69 Indicate below if this pupil is a member of any of the following racial or national origin groups.

0 = ERROR
1 = American Indian
2 = Negro
3 = Oriental
4 = Spanish-surnamed American (persons of Cuban, Mexican, or Puerto Rican descent)
5 = None of the above

19.75 What is the relationship of the head of this pupil's household to this pupil?

0 = ERROR
1 = Father
2 = Mother
3 = Uncle
4 = Aunt
5 = Grandparent
6 = Older brother or sister
7 = Other
8 = Don't know

20a.76 Is this pupil's family receiving welfare payments?

0 = ERROR 1 = Yes 2 = No 3 = Don't know

20b.77 Indicate the usual employment status of the head of this pupil's household.

0 = ERROR
1 = Regularly employed
2 = Seasonally employed
3 = Chronically unemployed
4 = Don't know

21.78, 79 In the box below, please write the usual occupation of the person who is the primary supporter of this pupil's family. If you don't know, write "Don't know" in the box.

Indicate below the one most appropriate option describing the occupation you have written in the box.

0 = ERROR
1 = Farm worker
2 = Farm manager or owner
3 = Unskilled worker, laborer or domestic worker
4 = Semi-skilled worker
5 = Skilled worker
6 = Sales agents and representatives
7 = Technical
8 = Manager or foreman
9 = Official
10 = Professional
11 = Don't know

22.80 Is this pupil's mother employed?

0 = ERROR
1 = Mother is deceased
2 = No mother in the home
3 = Yes, part-time or seasonal work
4 = Yes, full-time, steady work
5 = No
6 = Don't know

Table 1.2

PROFESSIONAL JUDGMENTS

Test Item and Record Location	Questions and response codes
9.40	Considering his present attitude, how far do you think this pupil will go in school? NOTE: Consider only this pupil's attitude, not financial or family problems. 0 = ERROR 1 = 8th grade or less 2 = 9th grade or further, but not high school graduation 3 = Graduate from high school 4 = Post high school education except college 5 = Enter college
10.41	Considering his ability, how far do you think this pupil could go in school? NOTE: Ability refers to your observation of the pupil's scholastic potential. 0 = ERROR 1 = 8th grade or less 2 = 9th grade or further, but not high school graduation 3 = Graduate from high school 4 = Post high school education except college 5 = Enter college
11.52-56	In your professional judgment, which of the following creates, or is, a persistent problem for this pupil? .52 Social immaturity .53 Emotion problems .54 Antisocial behavior .55 Malnutrition .56 Family instability 1 = Unmarked 2 = Marked
12.60-66	Should this pupil be classified as any of the following? .60 Socio-economically disadvantaged pupil .63 Potential dropout .66 Neglected or delinquent pupil 1 = Unmarked 2 = Marked

26.89 Estimate the educational level of the head of this pupil's household.

0 = ERROR
1 = Little or no education
2 = Probably completed grade school
3 = Probably some high school
4 = Probably completed high school
5 = Probably some post high school training but not college
6 = Probably some college
7 = Probably completed college
8 = Probably some graduate school education

26.90 Estimate the educational levels of this pupil's mother.

0 = ERROR
1 = Little or no education
2 = Probably completed grade school
3 = Probably some high school
4 = Probably completed high school
5 = Probably some post high school training but not college
6 = Probably some college
7 = Probably completed college
8 = Probably some graduate school education

Table 1.3

PROFESSIONAL OBSERVATIONS

Test Item and Record Location	Questions and response codes
39.199-207	Indicate those pupil personnel service activities that this pupil participated in, or has been the subject of, during the 1969-70 school year. Include only those activities carried out by the school attendance officer, counselor, health officials, psychologist, or social worker. Consider all services available to pupils in your school that meet the requirements stated.

Response code for items 39.199-207:

0 = ERROR
1 = Pupil received service
2 = Pupil needed service
3 = Pupil did not need service
4 = Activity not available

39.199 Diagnostic assessment of academic, social, or emotional programs

39.200 Case conference with teacher and other school personnel regarding problems of this pupil

39.201 Individual counseling

39.202 Group counseling

39.203 Psychological treatment

39.204 Home visitation

39.205 Remedial program carried out cooperatively with teacher

39.206 Referral to specialist or agency outside the school

39.207 Other pupil personnel service activity

42.235 If this pupil is given a difficult task to complete on his own, he usually:

0 = ERROR
1 = Gives up without trying
2 = Starts the problem, but gives up rapidly
3 = Persists for some time, but does not complete the task
4 = Completes the task that was assigned

Table 1.4

ACHIEVEMENT TEST DATA

Test Item and Record Location	Questions and response codes
44.237	Has a standardized achievement test/battery been administered to this pupil between September 1, 1968, and December 31, 1969? 0 = ERROR 1 = Yes 2 = No
46.241, 242	Indicate the test battery, level and form which was administered to this pupil as a pretest. (This item refers to the standardized achievement test batteries, including test levels and forms, listed below.) 1 = California Achievement Tests, Lower Primary (W or X) 2 = California Achievement Tests, Upper Primary (W or X) 3 = California Achievement Tests, Elementary (W, X, Y, or Z) 4 = Iowa Tests of Basic Skills (1, 2, 3, or 4) 5 = Metropolitan Achievement Tests, Primary I (A/AM, B/BM, or C/CM) 6 = Metropolitan Achievement Tests, Primary II (A/AM, B/BM, or C/CM) 7 = Metropolitan Achievement Tests, Elementary (A/AM, B/BM, or C/CM) 8 = Metropolitan Achievement Tests, Intermediate (A/AM, B/BM, or C/CM) 9 = SRA Achievement Series, Grades 1 - 2, (C or D) 10 = SRA Achievement Series, Grades 2 - 4, (C or D) 11 = SRA Achievement Series, Grades 3 - 4, (C or D) 12 = SRA Achievement Series, Multilevel, Grades 4 - 6 (C or D) 13 = SRA Achievement Series, Multilevel, Grades 6 - 8 (C or D) 14 = Stanford Achievement Test, Primary I (W, X, or Y) 15 = Stanford Achievement Test, Primary II (W, X, or Y) 16 = Stanford Achievement Test, Intermediate I (W, X, or Y) 17 = Stanford Achievement Test, Intermediate II (W, X, or Y) 18 = Gates MacGinitie Reading Test, Primary A (1 or 2) 19 = Gates MacGinitie Reading Test, Primary B (1 or 2) 20 = Gates MacGinitie Reading Test, Primary C (1 or 2) 21 = Other Test

48.247-263 In the appropriate boxes below, write the available pretest scores for this pupil. CAUTION: The scores must be only for the achievement test which you marked [in item 46], and only for the month and year you have indicated [in item 45]. (Actual percentile scores were recorded in the boxes provided.)

48.247, 248 Reading pretest score.

48.252, 253 Arithmetic pretest score.

48.257, 258 Language pretest score.

48.262, 263 Composite or total pretest score.

This raises questions as to whether schools participating in Title I programs were more likely to provide complete data than those not participating.

A national sample. While the samples should not be considered a randomized national sample, the sample does represent a large number of students. Within schools, attempts were made to guarantee that the sample was representative. Teachers participating in data collection were given randomized numbers to use in selecting students for reporting. The number of students selected was determined by the size of the class and ranged to a maximum of four students.

For the purpose of this study, the sample is considered as a national sample. The basic assumptions that must be made when comparing subpopulations within the sample is that both subpopulations are biased in comparable ways by the sampling technique used in this national sample. To this extent it seems reasonable to examine questions such as, "Is it possible in a national sample (this national sample) to observe differences between children who have participated in preschool programs and those who have not, provided other variables are held constant?"

Nonresponses. Tables 1.5 and 1.6 illustrate the extent to which nonresponses or responses of "don't know" affected the data for two of the subpopulations which were of greatest interest to this study. As can be seen from the tables, it was positively known that 52,778 had kindergarten and 17,399 did not, with the rest either nonresponses or a response indicating it was not known. On the other hand, Table 1.6 indicates that only 9,707 were positively known to have had preschool while 27,954 were positively known not to have had preschool. There were 23,153 nonresponses

and 24,008 responses of "don't know." In other questions where there was a possibility for nonresponses, varying degrees of nonresponse occurred.

Even when there was a response indicating whether or not an individual had preschool or kindergarten experiences, there was often no response concerning achievement test data. For example, of those individuals identified as belonging to different subpopulations defined by socioeconomic status (SES), grade, having or not having kindergarten and having or not having preschool, reading scores were recorded for only 20% to 55% of the children in the various subpopulations. Unfortunately, the subpopulations most frequently having missing test scores were those having the fewest individuals. In the area of language scores some subpopulations showed a language test subscore for as few as 6% of the individuals. A detailed analysis of these response rates will be found in Tables 2.1 through 2.6 of the next chapter.

The nonresponse profile is troublesome in another manner. A number of items were to be marked if a student had a particular characteristic. The question cannot be answered as to whether, in the various subpopulations being considered, the failure to mark such items meant the same across different subpopulations. For example, item 12 reads, "should this pupil be classified in any of the following (see definition 40)? (Mark all that apply.)" This is followed by a number of statements including the statement, "socioeconomically disadvantaged pupil." In other words, if the person was judged to be in this category, the item was marked. If it was not marked, it was assumed that he was not in this category.

A profile analysis of some items which describe socioeconomic status (SES) seems to indicate that these were marked in a meaningful manner.

Table 1.5

KINDERGARTEN, NO KINDERGARTEN, DON'T KNOW DISTRIBUTION

	No response	Yes	No	Don't know	TOTAL
GRADE 2	1,632	18,509	4,977	2,681	27,799
% Grade 2	6.9	66.6	17.9	9.6	100.0
GRADE 4	1,186	16,499	5,291	3,647	26,623
% Grade 4	4.5	62.0	19.9	13.7	100.0
GRADE 6	623	13,921	6,045	3,976	24,565
% Grade 6	2.5	56.7	24.6	16.2	100.0
OTHER	247	3,849	1,086	653	5,835
% Other	4.2	60.0	18.6	11.2	100.0
TOTAL	3,688	52,778	17,399	10,957	84,822
% Total	4.3	62.2	20.5	12.9	100.0

Table 1.6

PRESCHOOL, NO PRESCHOOL, DON'T KNOW DISTRIBUTION

	No response	Yes	No	Don't know	TOTAL
GRADE 2	7,594	4,877	8,353	6,975	27,799
% Grade 2	27.3	17.5	30.0	25.1	100.0
GRADE 4	7,357	2,888	8,413	7,965	26,623
% Grade 4	27.6	10.8	13.6	29.9	100.0
GRADE 6	6,733	1,104	9,296	7,432	24,565
% Grade 6	27.4	4.5	37.8	30.3	100.0
OTHER	1,469	838	1,892	1,636	5,835
% Other	27.9	15.6	35.3	30.5	100.0
TOTAL	23,153	9.707	27,954	24,008	84,822
% Total	27.3	11.4	33.0	28.3	100.0

But other items describing SES, such as job status, educational status and estimates of income, were not always marked.

Questions not used in the analysis. In addition to the questions not relevant to the objectives of this study, other questions which might have been relevant were not included because of concerns about the validity of the data. An example of this was a question asking the teacher to make estimates of maximum and minimum income for the family. Such questions were not included in the analysis for two reasons. The first was that the achievement of children might have affected the estimates of the income to some extent. Using an estimate of this type to compare achievement with the family income would seem dubious. The second was that teachers might have lacked the ability to make such estimates as well as data to support their judgments.

Evidence of reporting errors.

In the reporting of birth dates there is evidence of reporting errors. In addition to the problem of the wording of questions, there is evidence that when the responses were made they were not always reported accurately. For example, it was possible to indicate that an individual was born in 1951, which would have made him eighteen years old in the 69-70 school year. There were 69 such responses. It was also possible to indicate that students in a single grade were born in 1964, 5, 6, 7, 8, and 9. The records indicated that 24 people were born in 1964, 38 in 1965, 48 in 1966, 135 in 1967, 343 in 1968 and 140 in 1969. It seems rather unusual for any of the grades being reported (grades 2, 4 and 6) to have children from 1 to 5 years of age.

Obvious errors such as birth dates can be cared for by not using that data where the birth date is obviously wrong. This type of obvious error is reported because of the concern it raises about the data base as a whole. Some error in reporting and in placing information on computer files is to be expected. The assumption which must be made in order to use the data is that the error is random with respect to various subgroups. This example has been mentioned so that readers can be aware of the extent to which there is evidence for various types of reporting error.

In this particular study, the greatest concern is the lack of information in such responses as "don't know," or nonresponses and failure to provide achievement test data. A first impression is that a sample of 84,000 is a very large survey sample. But because of these problems with the data, the amount of usable information in the sample is not nearly as large as it initially seems.

Interpretation of data.

The use and interpretation of the data is further complicated by other factors. These include the number of different measures of achievement that were used (20 different achievement tests), and ambiguity as to whether some factors contributed to success or were the results of success, i.e., independent or dependent variables.

The lack of test data and the use of multiple achievement tests. In addition to the large percentage of missing test scores, the scores that were available were distributed among 20 test forms and the mark "other." The test used for the least number of students was given to 111 students, while the test used for the largest number was given to 7,793 students. There was an even more appalling lack of results for the "posttest" scores.

The test manuals provided little information on norming procedures, and only minimal information for equating the tests was available from the publishers. A review of literature revealed one major study that dealt with equating tests--the Anchor Test Study (Bianchini and Loret, 1974). Unfortunately, the study dealt with only grades 4, 5, and 6 and with test versions dated later than 1969 for the California Achievement Test, the Iowa Test of Basic Skills, the Metropolitan Achievement Test, and the SRA Achievement series.

The various achievement test scores suggest a difference in the norming procedures between the tests. However, certain states predominately used certain tests. Thus, an attempt to use the existing data to analyze the difference between the test norming is not possible. A review of the Anchor study also indicates the magnitude and difficulty of such a study.

Interpretation of independent and dependent variables.

Treating achievement test scores as a dependent variable is obvious. However, a number of the variables relating to categorized data could be considered either independent or dependent variables. Some have argued that studies such as the Westinghouse Study (1970) showed so few differences between children who were involved in preschool programs and those who were not because the studies were examining the wrong variables. Specifically, some felt that there was an overemphasis on measures of academic achievement or increases in IQ as compared to indicators of attitude or social adjustment.

Table 1.2, professional judgments, and Table 1.3, professional observations, contain items that could be considered as indicators of social maturity, social stability and attitudes.

Variables such as social immaturity, emotional problems, antisocial behavior, potential dropout (characteristics to be checked if they were a problem) might be considered either independent or dependent. Three cases which illustrate this are:

1. For children having preschool or kindergarten experiences these indicators could be considered measures of program success or failure. In this case, they could be considered dependent variables as compared to the independent variables of having or not having preschool or kindergarten.
2. These same factors could be considered as independent variables contributing to the dependent variable of academic achievement.
3. These variables could be considered as dependent variables when compared with demographic independent variables.

The terms "independent" and "dependent" are used here in relation to statistical analyses, such as multiple linear regression, where a "dependent" variable such as achievement can vary with a number of "independent" variables. This does not suggest that some particular point of view could support any type of analysis where causal relations could be established. Rather, it illustrates how alternative points of view might lead to different analytic approaches.

Selection of program participants.

Questions related to the reasons for participation or nonparticipation in kindergarten or preschool programs present the most significant obstacles to meaningful interpretations of the data. For example, with the present data base it is not possible to determine to what extent factors contributing to the responses for demographic data and professional judgments

and observations also contributed to an individual's acceptance in a federally supported preschool program. Similarly, it is not possible to determine why students were or were not in kindergarten programs. Some of the possible explanations include: (1) A school district contained a low tax base, hence there was not adequate financial support for a kindergarten program. This could suggest that many of the individuals in that district were from less affluent homes. (2) Children were from migrant or rural families where they assisted in generating family income. (3) Children were from affluent families where there were sufficient enriching experiences related to the home to make kindergarten of minor value.

In the first two instances, one would expect the indicators of social maturity and stability to be less positive than for the population as a whole, while the third case would suggest that the indicators might be more positive than for the population as a whole. The examples suggest that factors affecting whether or not an individual went to kindergarten could also affect the results from responses to the demographic items and to the professional judgments and observations (Tables 1.1 through 1.3). These factors could also be affected by the results of preschool or kindergarten experiences. Thus, there are two distinct alternatives in the meaning of these variables to the questions being examined by this report. Further, it is not unreasonable to conjecture that the overall results reflect both types of situations.

Perhaps the most perplexing issue related to selection involves socioeconomic status in relation to participation in preschool programs. Item 12.60 (Table 1.1) was to be checked if a pupil was considered a "socioeconomically disadvantaged pupil." Many teachers have only limited knowledge of a student's home environment. In such instances

the student's appearance, behavior and achievement could do much to influence a teacher's response to this item. Successful preschool or kindergarten programs might have affected children's behavior and achievement and thus influenced their classification. They might have been classified by their teachers as socioeconomically disadvantaged prior to such programs, while changes in behavior, achievement, and attitude resulting from the program might result in a later classification as not socioeconomically disadvantaged.

If such a situation occurred, it could easily mask the positive affects of either preschool or kindergarten programs. Pupils who were from socioeconomically disadvantaged homes and who benefited most from these programs might, in a reclassification, be placed in subpopulations not considered to be socioeconomically disadvantaged. Substantial gains, while sufficient to result in their reclassification, might not be large enough for these pupils to compare favorably with other pupils who had been originally classified as not socioeconomically disadvantaged.

The above situations have been discussed to help acquaint the reader with specific limitations of this data and the care which should be taken in using analyses of the data for decision purposes. On the other hand, the inability to establish causal relationships from correlational or descriptive data is inherent in studies using such data. This does not mean that such data cannot be useful, but rather that any interpretations should be made with great care. The analysis of such data may make significant contributions by suggesting types of experimental studies that can establish causal relations.

Definition of Terms

There are three terms used consistently throughout this report which may be operationally defined. These terms are preschool, low SES and higher SES.

Preschool.

Preschool experience was defined in terms of the response to the following question:

> 8. Which of the following school experiences did the student have before entering the first grade? Prekindergarten (programs such as nursery school, Head Start, day care centers, etc.).

The alternative responses were yes, no, and don't know. It is important to note that no data was collected which would provide information as to the amount of preschool experience or its specific type.

Low and higher SES.

For the purpose of this report, students have been dichotomized into low SES and higher SES, based upon a teacher judgment. This judgment was in response to the following:

> 12. Should the pupil be classified in any of the following (see definition 40)? (Mark all that apply.) Socioeconomically disadvantaged pupil.

The term low SES (LSES) is used to designate those pupils that teachers indicated were "socioeconomically disadvantaged." The term higher SES (HSES) is used where this response was not marked, i.e., the teacher did not feel that the pupil was a "socioeconomically disadvantaged" pupil. Thus, higher is meant to be higher than those pupils considered

to be socioeconomically disadvantaged, and should not be considered to mean the same as the term high SES as it is used in sociological literature. In this study higher SES simply means not low SES.

An Overview of Procedures

The intent of this study was to make comparisons of various subpopulations on measures of student achievement and teachers' observations about pupil attitudes, social maturity, etc. In keeping with these statements of purpose, rather simple statistical techniques have been employed in comparing the data for different subpopulations. Such an approach does not require decisions as to whether variables are dependent or independent for the purpose of analysis, a decision which has been shown to have reasonable alternatives for some variables.

Principal procedures.

The principal procedures used in analysis involve: (1) a one-way analysis of variance of test scores for comparing achievement of selected subpopulations, (2) Cattell's Profile Analysis (Cattell, 1949) for examining overall differences or similarities of categorized data about these subpopulations, and (3) a chi-square analysis of specific variables of categorized data. For the comparison of small subpopulations, the t distribution is used as the test of statistical significance. Because of the possible effects of sampling on scores of the subpopulations, an arbitrary decision was made not to report data for any analysis of variance comparisons where the smallest group had less than 25 individuals.

One of the major factors contributing to the decision to use multiple comparisons was the fact that a variety of tests were used to measure achievement. An obvious problem of such procedures is that a certain number of significant differences could be expected from repeated random sampling. For example, approximately 1 in 20 might be expected if the .05 level were accepted as the level of significance. (Unless stated differently for a particular table, a significance level of $p \leqq .05$ was used in this study.)

One way to view such multiple comparisons of the same hypothesis is to look at the set of comparisons as a whole. When this is done it is possible to use the binomial distribution to examine the probability of having a given number of significant comparisons at a specified level, or a simple sign test may be used to examine the probability of having a given proportion of the comparisons favoring one category of subpopulation over the other.

These rather simple procedures, in addition to descriptive statistics, are the primary methods used for the analysis of the data in this study. Tables are included showing the results of multiple comparisons of achievement involving subpopulations where the smaller of the subpopulations has an N of 25 or greater. Similar tables involving profile analysis and a comparison of individual categorized variables using chi-square analysis show results for the same major subpopulations. Because of the previously discussed problems with the data, it was felt inappropriate to attempt to portion variability. For this same reason, comparisons have been made with limited comment concerning their potential meaning.

Use of achievement test percentile scores.

Both achievement test percentile scores and grade equivalent scores were reported. The decision was made to use the percentile scores in the analysis of achievement test data because grade equivalent scores would have had to be converted to compensate for the time at which the test was given. This factor was already included in the percentile data.

To use the percentile scores a table was developed which converted each percentile score to a standard Z score. These were then used in all analyses involving achievement test scores. This also allowed for an examination of the variance of these standardized tests to determine how close it came to the expected value of 1 for different populations.

Estimation of school entrance ages.

An important item of data that was missing from this questionnaire, and which would have made it possible to determine entrance ages more accurately, was information concerning retention or skipping of grades. Without this information it was impossible to determine exact entrance ages. To assist in examining the distribution of estimated entrance ages, birth dates were converted to the age in months as of September 1, 1970. These values were then used in tables of descriptive statistics. An examination of these statistics revealed that for each grade there was a definite modal year--a year which contained the greatest number of birth dates.

There were two major problems in running simple correlational statistics comparing achievement and age. The first problem was the inability to control for retained students who would be older in a given grade, not

because of late entrance but because they had failed at some time. These students in reality could have been early entrants. A second problem was the inability to control for differences in the curriculum that might have affected pupils taking given grades in different years.

As many as possible of these factors were controlled by taking students in a given grade with birth dates in the first three months of the modal year and comparing their achievement scores with those of students whose birth dates occurred during the last three months of the modal year. In this manner the students were more likely to have similar curriculums, and there was less likelihood of including pupils with significantly different acceleration or retention rates. The results of these simple comparisons are reported with the realization that they represent, at best, estimates of early and late entrance during the modal birth year.

Caution concerning the interpretation of chi-square values.

A note of caution needs to be given concerning the interpretation of chi-square values for large samples as the chi-square test becomes increasingly sensitive with large samples. The cell contributions to chi-square are calculated by subtracting the expected values from the observed, squaring this value and then dividing by the expected value. For example, if an expected value were 100 and there was a 5% variation from that value, the observed minus the expected value squared would equal 25. Dividing 25 by the expected value of 100 would equal .25. If the total value of chi-square were the sum of two such cells, it would equal .5.

If an expected value were 1,000 with a variation of 5%, the observed minus the expected value would be 50. 50 squared divided by 1,000 would equal 2.5. Thus, two cells of this type would equal a value of 5, a value significant at the .05 level when there is only one degree of freedom.

If the expected value were 10,000 with a 5% variation of the observed from the expected, each cell would contribute a value of 500 squared divided by 10,000, or 25. Two such cells would yeild a value of chi-square equal to 50. Thus, for very large samples even small variations from the expected value can cause significant values of chi-square.

In addition to the simple example given, it is also possible to demonstrate that for large samples cells which have a relatively small expected value can make disproportionate contributions to the total value of chi-square. For example, in a sample of 10,000 with an expected value for the first cell of 9,900 and an expected value for the second cell of 100, and with a variation from the expected value in both cells of 20, the contribution of the first cell would be 400 divided by 9,900 or slightly more than .40, while the contribution of the second cell would be 400 over 100 or 4.

As can be seem from the examples above, the expected value of chi-square for a fixed percentage variation from the expected value can be expected to increase directly with the size of the sample. Because of the extreme sensitivity of chi-square to larger samples, it is important not only to determine that the two samples represent statistically significant differences, but also to consider how meaningful those differences are, i.e., how much variation from the expected values were required to obtain this value of chi-square.

It is because of problems of this type that the analysis of an overall profile may be more important than the analysis of responses to single items. Thus, while there will be discussion of responses to particular items, it seems appropriate to attach greater meaning to the results of the profile analysis as measured by Cattell's pattern similarity index.

CHAPTER II: DESCRIPTIVE STATISTICS

This chapter is divided into three major sections. These sections are (1) response profiles, (2) average pupil age and state entrance laws, and (3) nominal and ordinal response data for selected subpopulations.

Response Profiles

Tables 2.1 through 2.6 indicate response profiles for grades 2, 4, and 6 with kindergarten and without kindergarten, and grades 2, 4, and 6 with preschool and without preschool. The tables are organized to show the number of responses for a given grade of children categorized as higher SES (HSES) having kindergarten and not having kindergarten, and low SES (LSES) having kindergarten and not having kindergarten. The total responses classifying children into these subcategories are compared with the number who had some formal achievement test score and with the number and percentage who had reading scores, math scores and language scores.

The lower sections of Tables 2.1 through 2.6 show the breakdown of the type of test scores which were available. Numbers indicate that students had at least one score from a reading test, a math test, a language test or a composite test score, i.e., a pupil may have had all of these scores or any combination of them. Abbreviations refer to the tests listed in Table 1.4 under item 46.241,242. These tables demonstrate the significant role that missing data has played in the study and the minimal information available on children who were categorized as LSES.

Table 2.1

Grade 2 KINDERGARTEN-NO KINDERGARTEN

RESPONSE PATTERN

	With Kind. HSES*	No Kind. HSES*	With Kind. LSES**	No Kind. LSES**
Responses	15,262	3,660	3,094	1,317
Test Scores	6,278	1,406	1,109	423
% Responding	41%	38%	36%	32%
Reading Scores	4,555	982	654	260
% Responding	30%	27%	21%	20%
Math Scores	2,790	800	321	196
% Responding	18%	22%	10%	15%
Language Scores	900	340	320	74
% Responding	6%	9%	10%	6%

TYPE OF TEST SCORES AVAILABLE

01 CAT Lower Primary	375	188	63	57
02 CAT Upper Primary	17	1	2	1
03 CAT Elementary	27	7	6	1
04 Iowa Test Basic Sk.	43	5	5	1
05 MAT Primary I	1,238	306	336	126
06 MAT Primary II	455	82	70	16
07 MAT Elementary	21	6	5	2
08 MAT Intermediate	7	0	1	0
09 SRA Grades 1-2	130	86	3	26
10 SRA Grades 2-4	8	16	1	2
11 SRA Grades 3-4	5	1	0	0
12 SRA Grades 4-6	8	1	0	0
13 SRA Grades 6-8	0	0	0	0
14 SAT Primary 1	2,466	502	336	113
15 SAT Primary II	200	19	24	3
16 SAT Intermediate I	7	2	1	1
17 SAT Intermediate II	5	0	0	0
18 Gates Rd. Primary A	319	56	33	9
19 Gates Rd. Primary B	331	56	28	13
20 Gates Rd. Primary C	2	0	0	0
21 Other Tests	614	72	195	52

* HSES Not judged by teachers to be "socioeconomically disadvantaged."
** LSES Judged by teachers to be "socioeconomically disadvantaged."

Table 2.2

Grade 4 KINDERGARTEN -NO KINDERGARTEN

RESPONSE PATTERN

	With Kind. HSES	No Kind. HSES	With Kind. LSES	No Kind. LSES
Responses	13,718	3,872	2,602	1,419
Test Scores	9,729	2,521	1,173	881
% Responding	71%	65%	68%	62%
Reading Scores	7,053	1,844	1,110	559
% Responding	51%	48%	43%	39%
Math Scores	6,451	1,757	981	516
% Responding	47%	45%	38%	36%
Language Scores	6,211	1,696	914	495
% Responding	45%	44%	35%	35%

TYPE OF TEST SCORES AVAILABLE

01 CAT Lower Primary	46	37	4	9
02 CAT Upper Primary	333	171	42	38
03 CAT Elementary	415	161	47	46
04 Iowa Test Basic Sk.	2,417	355	383	139
05 MAT Primary I	34	12	34	8
06 MAT Primary II	269	60	172	64
07 MAT Elementary	1,677	388	492	212
08 MAT Intermediate	62	5	7	3
09 SRA Grades 1-2	6	3	0	2
10 SRA Grades 2-4	40	30	2	14
11 SRA Grades 3-4	262	108	17	16
12 SRA Grades 4-6	40	54	20	24
13 SRA Grades 6-8	2	0	0	0
14 SAT Primary 1	88	5	19	2
15 SAT Primary II	1,958	549	275	165
16 SAT Intermediate I	1,028	355	83	62
17 SAT Intermediate II	25	6	1	0
18 Gates Rd. Primary A	5	1	0	0
19 Gates Rd. Primary B	8	1	5	0
20 Gates Rd. Primary C	111	45	23	8
21 Other Tests	903	195	147	69

Table 2.3

Grade 6 KINDERGARTEN -NO KINDERGARTEN

RESPONSE PATTERN

	With Kind. HSES	No Kind. HSES	With Kind. LSES	No Kind. LSES
Responses	11,702	4,527	2,043	1,518
Test Scores	8,599	3,007	1,368	1,019
% Responding	73%	66%	67%	67%
Reading Scores	6,411	2,260	847	640
% Responding	55%	50%	41%	43%
Math Scores	6,277	2,212	816	641
% Responding	54%	49%	40%	42%
Language Scores	5,987	2,154	754	606
% Responding	51%	48%	37%	40%

TYPE OF TEST SCORES AVAILABLE

01 CAT Lower Primary	7	7	2	3
02 CAT Upper Primary	75	27	16	10
03 CAT Elementary	711	418	70	126
04 Iowa Test Basic Sk.	2,216	495	334	156
05 MAT Primary I	3	3	4	1
06 MAT Primary II	6	1	8	2
07 MAT Elementary	176	68	108	52
08 MAT Intermediate	1,090	348	278	180
09 SRA Grades 1-2	0	2	0	0
10 SRA Grades 2-4	0	1	0	0
11 SRA Grades 3-4	2	4	0	1
12 SRA Grades 4-6	242	192	18	45
13 SRA Grades 6-8	36	49	2	6
14 SAT Primary 1	7	5	7	0
15 SAT Primary II	28	3	7	2
16 SAT Intermediate I	458	277	88	106
17 SAT Intermediate II	1,847	778	204	262
18 Gates Rd. Primary A	0	0	0	0
19 Gates Rd. Primary B	0	0	0	1
20 Gates Rd. Primary C	37	4	5	1
21 Other Tests	1,658	325	217	85

Table 2.4

Grade 2 PRESCHOOL -NO PRESCHOOL

RESPONSE PATTERN

	With Presch. HSES	No Presch. HSES	With Presch. LSES	No Presch. LSES
Responses	3,457	6,695	1,420	1,658
Test Scores	1,330	2,743	492	554
% Responding	38%	41%	35%	33%
Reading Scores	883	1,973	290	329
% Responding	26%	29%	20%	20%
Math Scores	532	1,401	166	199
% Responding	15%	21%	12%	12%
Language Scores	209	491	76	70
% Responding	6%	7%	5%	4%

TYPE OF TEST SCORES AVAILABLE

01 CAT Lower Primary	117	248	57	47
02 CAT Upper Primary	5	3	0	1
03 CAT Elementary	13	19	5	3
04 Iowa Test Basic Sk.	1	19	1	1
05 MAT Primary I	331	577	181	176
06 MAT Primary II	94	145	21	25
07 MAT Elementary	6	15	1	3
08 MAT Intermediate	0	3	0	0
09 SRA Grades 1-2	30	107	13	12
10 SRA Grades 2-4	1	17	0	1
11 SRA Grades 3-4	0	2	0	0
12 SRA Grades 4-6	0	1	0	0
13 SRA Grades 6-8	0	0	0	0
14 SAT Primary 1	366	1,035	105	159
15 SAT Primary II	41	69	1	6
16 SAT Intermediate I	2	5	0	1
17 SAT Intermediate II	0	1	0	0
18 Gates Rd. Primary A	88	131	19	11
19 Gates Rd. Primary B	59	120	15	13
20 Gates Rd. Primary C	0	0	0	0
21 Other Tests	176	226	73	95

Table 2.5

Grade 4 PRESCHOOL-NO PRESCHOOL

RESPONSE PATTERN

	With Presch. HSES	No Presch. HSES	With Presch. LSES	No Presch. LSES
Responses	2,019	6,704	749	1,709
Test Scores	1,329	4,701	504	1,118
% Responding	66%	70%	67%	65%
Reading Scores	942	3,414	326	693
% Responding	47%	51%	44%	41%
Math Scores	864	3,216	309	629
% Responding	43%	48%	41%	37%
Language Scores	837	3,092	293	599
% Responding	41%	46%	39%	35%

TYPE OF TEST SCORES AVAILABLE

01 CAT Lower Primary	22	35	4	7
02 CAT Upper Primary	59	233	19	39
03 CAT Elementary	64	226	13	43
04 Iowa Test Basic Sk.	247	995	87	194
05 MAT Primary I	9	15	6	12
06 MAT Primary II	51	118	30	110
07 MAT Elementary	302	720	147	260
08 MAT Intermediate	6	15	3	2
09 SRA Grades 1-2	1	5	0	2
10 SRA Grades 2-4	7	45	5	9
11 SRA Grades 3-6	28	174	5	16
12 SRA Grades 4-6	20	56	15	22
13 SRA Grades 6-8	1	0	0	0
14 SAT Primary I	14	25	2	3
15 SAT Primary II	249	1,064	87	214
16 SAT Intermediate I	176	497	32	64
17 SAT Intermediate II	3	8	0	0
18 Gates Rd. Primary A	1	0	0	0
19 Gates Rd. Primary B	3	4	1	2
20 Gates Rd. Primary C	21	53	4	14
21 Other Tests	165	413	44	105

Table 2.6

Grade 6 PRESCHOOL-NO PRESCHOOL

RESPONSE PATTERN

	With Presch. HSES	No Presch. HSES	With Presch. LSES	No Presch. LSES
Responses	987	7,393	117	1,903
Test Scores	736	5,258	80	1,288
% Responding	75%	71%	68%	68%
Reading Scores	559	3,911	43	825
% Responding	57%	53%	37%	43%
Math Scores	552	3,821	42	797
% Responding	56%	52%	36%	42%
Language Scores	520	3,697	41	748
% Responding	53%	50%	35%	39%

TYPES OF TEST SCORES AVAILABLE

01 CAT Lower Primary	0	5	0	4
02 CAT Upper Primary	2	56	0	15
03 CAT Elementary	80	538	5	124
04 Iowa Test Basic Sk.	155	1,149	9	232
05 MAT Primary I	0	1	1	1
06 MAT Primary II	0	2	2	6
07 MAT Elementary	7	89	9	84
08 MAT Intermediate	120	623	21	227
09 SRA Grades 1-2	0	2	0	0
10 SRA Grades 2-4	0	1	0	0
11 SRA Grades 3-4	0	4	0	1
12 SRA Grades 4-6	19	252	2	46
13 SRA Grades 6-8	6	49	1	13
14 SAT Primary 1	1	4	0	4
15 SAT Primary II	2	15	0	6
16 SAT Intermediate I	24	354	4	122
17 SAT Intermediate II	181	1,308	15	280
18 Gates Rd. Primary A	0	0	0	0
19 Gates Rd. Primary B	0	0	0	0
20 Gates Rd. Primary C	0	12	0	2
21 Other Tests	139	785	11	129

Tables 2.7 and 2.8 show the overall response profile by state for preschool and kindergarten. The heading entitled "no response" indicates that there was no response to the item. There were three possible responses of which one was to be marked: yes, no, and don't know. The number for each state that was marked and the corresponding percentages are found in columns headed "yes," "no," and "don't know." An examination of the table shows that there were no response data for Alaska, Montana, Rhode Island and Wyoming.

Table 2.7--data by state for preschool--indicates responses of "yes, had preschool" ranged from 0% in South Dakota to 21.7% in West Virginia. The mean of the response percentages was 10.50* with a standard deviation of 4.53.

An examination of Table 2.8, the response profile by states for kindergarten, shows a relatively small number of responses for "no kindergarten." The range of the percentages indicating that pupils had no kindergarten varied from 1.1% in Utah and Nebraska to 60.3% in Kentucky. The mean of the response percentages was 22.2* (the percentage for the sample as a whole was 20.5% "no") with a standard deviation of 18.4. A comparison with the response "yes" for preschool shows the standard deviation of 18.4 to be about four times as great as that for preschool.

A further examination of the data shows that states reporting more than 300 students without kindergarten accounted for 14,429 out of a

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*Ordinarily means of percentages are not calculated. In this instance they are calculated to show average response rates for states by percentage. The mean cited is not the average response rate for the entire sample, but an average of the response percentages.

TABLE 2.7
RESPONSE PROFILE
PRESCHOOL BY STATE

State	No Response		Yes		No		Don't Know	
	No.	%	No.	%	No.	%	No.	%
Alabama	657	28.1	281	12.0	924	39.5	477	20.4
Alaska	0	0	0	0	0	0	0	0
Arizona	185	26.0	73	10.3	269	37.8	185	26.0
Arkansas	195	27.3	118	16.5	316	44.3	84	11.8
California	1346	27.6	404	8.3	1008	20.7	2122	43.5
Colorado	214	19.2	153	13.7	294	26.3	455	40.8
Connecticut	143	18.2	70	8.9	282	36.0	289	36.9
Delaware	58	25.0	6	2.6	65	28.0	103	44.4
Dist of Columbia	414	45.5	88	9.7	163	17.9	245	26.9
Florida	1177	21.5	662	12.1	1887	34.4	1759	32.1
Georgia	914	37.2	334	13.6	727	24.6	484	19.7
Hawaii	232	19.8	223	19.0	377	32.2	339	28.9
Idaho	74	37.8	6	3.1	85	43.4	31	15.8
Illinois	1299	29.4	492	11.1	1153	26.1	1471	33.3
Indiana	635	36.2	92	5.2	482	27.5	546	31.1
Iowa	247	26.7	40	4.3	281	30.4	357	38.6
Kansas	387	31.2	104	8.4	402	32.4	348	28.0
Kentucky	183	16.6	116	10.5	620	56.1	186	16.8
Louisiana	638	27.5	295	12.7	711	30.7	675	29.1
Maine	68	31.6	21	9.8	92	42.8	34	15.8
Maryland	363	32.4	91	8.1	322	28.7	346	30.8
Massachusetts	384	27.2	141	10.0	447	31.7	439	31.1
Michigan	1122	33.0	250	7.4	960	28.2	1068	31.4
Minnesota	521	28.6	115	6.3	588	32.3	598	32.8
Mississippi	296	23.1	250	19.5	495	38.6	243	18.9
Missouri	331	42.0	47	6.0	249	31.6	161	20.4
Montana	0	0	0	0	0	0	0	0
Nebraska	129	34.1	34	9.0	113	29.9	102	27.0
Nevada	2	8.3	1	4.2	11	45.8	10	41.7
New Hampshire	8	13.3	7	11.7	24	40.0	21	35.0
New Jersey	556	29.1	275	14.4	590	30.9	487	25.5
New Mexico	119	14.4	127	15.4	396	48.0	183	22.2
New York	1928	22.3	1154	13.4	2858	33.1	2692	31.2
North Carolina	601	20.9	489	17.0	1318	45.9	461	16.1
North Dakota	36	17.8	17	8.4	105	52.0	44	21.8
Ohio	1244	26.8	419	9.0	1475	31.7	1509	32.5
Oklahoma	318	32.5	84	8.6	288	29.5	287	29.4
Oregon	227	25.1	76	8.4	294	32.5	307	34.0
Pennsylvania	1451	37.7	243	6.3	1384	36.0	770	20.0
Rhode Island	0	0	0	0	0	0	0	0
South Carolina	381	22.2	225	13.1	644	37.5	466	27.2
South Dakota	28	39.4	0	0	33	46.5	10	14.1
Tennessee	786	29.6	430	16.2	1039	39.1	400	15.1
Texas	1553	26.9	985	17.1	1865	32.3	1367	23.7
Utah	259	36.3	58	8.1	210	29.4	187	26.2
Vermont	34	57.6	4	6.8	9	15.3	12	20.3
Virginia	528	23.3	329	14.5	922	40.7	484	21.4
Washington	395	27.4	114	7.9	431	29.9	502	34.8
West Virginia	54	18.0	65	21.7	150	50.0	31	10.3
Wisconsin	433	24.6	99	5.6	596	33.9	631	35.9
Wyoming	0	0	0	0	0	0	0	0

TABLE 2.8
RESPONSE PROFILE
KINDERGARTEN BY STATE

State	No Response		Yes		No		Don't Know	
	No.	%	No.	%	No.	%	No.	%
Alabama	182	7.8	824	35.2	964	41.2	369	15.8
Alaska	0	0	0	0	0	0	0	0
Arizona	42	5.9	280	39.3	234	32.9	156	21.9
Arkansas	101	14.2	185	25.9	341	47.8	86	12.1
California	74	1.5	4162	85.3	142	2.9	502	10.3
Colorado	13	1.2	932	83.5	53	4.7	118	10.6
Connecticut	4	0.5	724	92.3	17	2.2	39	5.0
Delaware	2	0.9	126	54.3	43	18.5	61	26.3
Dist of Columbia	23	2.5	744	81.8	60	6.6	83	9.1
Florida	320	5.8	2089	38.1	1757	32.0	1319	24.0
Georgia	168	6.8	1237	50.3	630	25.6	424	17.2
Hawaii	21	8.1	1019	87.0	60	5.1	71	6.1
Idaho	3	1.5	104	53.1	62	31.6	27	13.8
Illinois	113	2.6	3647	82.6	269	6.1	386	8.7
Indiana	46	2.6	1303	74.2	200	11.4	206	11.7
Iowa	8	0.9	866	93.6	12	1.3	39	4.2
Kansas	18	1.5	1065	85.8	74	6.0	84	6.8
Kentucky	69	6.2	181	16.4	666	60.3	189	17.1
Louisiana	115	5.0	1000	43.1	782	33.7	422	18.2
Maine	6	2.8	194	90.2	9	4.2	6	2.8
Maryland	12	1.1	936	83.4	111	9.9	63	5.6
Massachusetts	22	1.6	974	69.0	237	16.8	178	12.6
Michigan	66	1.9	3100	91.2	69	2.0	165	4.9
Minnesota	32	1.8	1600	87.8	98	5.4	92	5.0
Mississippi	197	15.3	286	22.3	497	38.7	304	23.7
Missouri	17	2.2	556	70.6	151	19.2	64	8.1
Montana	0	0	0	0	0	0	0	0
Nebraska	5	1.3	354	93.7	4	1.1	15	4.0
Nevada	0	0	7	29.2	11	45.8	6	25.0
New Hampshire	0	0	35	58.3	17	28.3	8	13.3
New Jersey	46	2.4	1597	83.7	125	6.6	140	7.3
New Mexico	48	5.8	152	18.4	469	56.8	156	18.9
New York	237	2.7	6427	74.5	1033	12.0	935	10.8
North Carolina	228	7.9	920	32.1	1350	47.1	371	12.9
North Dakota	8	4.0	41	20.3	110	54.5	43	21.3
Ohio	78	1.7	3601	77.5	488	10.5	480	10.3
Oklahoma	26	2.7	687	70.3	140	14.3	124	12.7
Oregon	20	2.2	544	60.2	192	21.2	148	16.4
Pennsylvania	109	2.8	2657	69.0	747	19.4	335	8.7
Rhode Island	0	0	0	0	0	0	0	0
South Carolina	168	9.8	368	21.4	723	42.1	457	26.6
South Dakota	0	0	63	88.7	2	2.8	6	8.5
Tennessee	232	8.7	876	33.0	1179	44.4	368	13.9
Texas	512	8.9	2268	39.3	1901	32.9	1089	18.9
Utah	13	1.8	644	90.2	8	1.1	49	6.9
Vermont	9	15.3	15	25.4	11	18.6	24	40.7
Virginia	173	7.6	715	31.6	902	39.9	473	20.9
Washington	21	1.5	1036	71.8	219	15.2	166	11.5
West Virginia	47	15.7	46	15.3	177	59.0	30	10.0
Wisconsin	34	1.9	1591	90.4	53	3.0	81	4.6
Wyoming	0	0	0	0	0	0	0	0

TABLE 2.9
RESPONSE PROFILE
SOCIO ECONOMICALLY DISADVANTAGED BY STATE

State	No		Yes	
	No.	%	No.	%
Alabama	1891	80.8	448	19.2
Alaska	0	0	0	0
Arizona	642	90.2	70	9.8
Arkansas	549	77.0	164	23.0
California	4216	86.4	664	13.6
Colorado	946	84.8	170	15.2
Connecticut	675	86.1	109	13.9
Delaware	226	97.4	6	2.6
Dist of Columbia	693	76.2	217	23.8
Florida	4329	78.9	1156	21.1
Georgia	1900	73.3	559	22.7
Hawaii	1034	88.3	137	11.7
Idaho	178	90.8	18	9.2
Illinois	3346	75.8	1069	24.2
Indiana	1421	81.0	334	19.0
Iowa	854	92.3	71	7.7
Kansas	1079	86.9	162	13.1
Kentucky	980	88.7	125	11.3
Louisiana	1743	75.2	576	24.8
Maine	197	91.6	18	8.4
Maryland	807	71.9	315	28.1
Massachusetts	1212	85.9	199	14.1
Michigan	2847	83.7	553	16.3
Minnesota	1657	90.9	165	9.1
Mississippi	964	75.1	320	24.9
Missouri	686	87.1	102	12.9
Montana	0	0	0	0
Nebraska	295	78.0	83	22.0
Nevada	23	95.8	1	4.2
New Hampshire	53	88.3	7	11.7
Ner Jersey	1539	80.7	369	19.3
New Mexico	695	84.2	130	15.8
New York	5788	67.1	2844	32.9
North Carolina	2341	81.6	528	18.4
North Dakota	190	94.1	12	5.9
Ohio	3931	84.6	716	15.4
Oklahoma	788	80.7	189	19.3
Oregon	791	87.5	113	12.5
Pennsylvania	3109	80.8	739	19.2
Rhode Island	0	0	0	0
South Carolina	1374	80.1	342	19.9
South Dakota	61	85.9	10	14.1
Tennessee	2037	76.7	618	23.3
Texas	4453	77.2	1317	22.8
Utah	665	93.1	49	6.9
Vermont	55	93.2	4	6.8
Virginia	1847	81.6	416	18.4
Washington	1277	88.6	165	11.4
West Virginia	241	80.3	59	19.7
Wisconsin	1569	89.2	190	10.8
Wyoming	0	0	0	0

possible 17,399 "no" responses, or about 82.9% of those that did not have kindergarten. There were sixteen states in this category--Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, New Mexico, New York, North Carolina, Ohio, Pennsylvania, South Carolina, Tennessee, Texas and Virginia. With the exception of New Mexico, New York, Ohio and Pennsylvania, all of these might be considered as southern or borderline southern states.

It was the original intention to consider the entire sample as a national sample. However, the fact that about 80% of pupils not having kindergarten came from about 1/3 of the states resulted in the decision to make individual analyses on the above selected states.

It is important to note that in Tables 2.7 and 2.8 the total responses for a state relating preschool or no preschool attendance and kindergarten or no kindergarten attendance are given. In analyzing these responses they must still be broken down by grade 2, 4, and 6, and within grades by HSES and LSES. An examination of Tables 1.5 and 1.6 reveals that total responses by grade (27,799; 26,623; and 24,565) are distributed almost equally across the grades. On the other hand, an examination of Table 2.9--response profile of socioeconomically disadvantaged by state--reveals that fewer students were marked as socioeconomically disadvantaged than were not marked. For the total profile, 19.6% of all individuals were marked as socioeconomically disadvantaged, or approximately 1 in 5. When the probability of being in a given grade, approximately 1/3, is multiplied by the probability of being socioeconomically disadvantaged, approximately 1/5, the result is that about 1 pupil in 15 can be expected to be both socio-economically disadvantaged and in a given grade.

Finally, an examination of Tables 2.1 through 2.6 shows that even when a child has been identified as socioeconomically disadvantaged in a given grade, the probability of his having an achievement test score in reading, mathematics, or language, ranges from a low of .04 to a maximum of .44. In other words, if a response indicates that a child did or did not have preschool, or did or did not have kindergarten, the probability of there also being a test score (1) in a given area (reading, math or language), (2) for a given grade, and (3) for LSES is less than 1/3 multiplied by 1/5 multiplied by 1/2, or one chance in 30. Frequently the probability is as low as .02 or .01 for specific tests, groups, and states. Applying this formula to the responses of given states makes the problem of sample sizes very apparent.

Average Pupil Age and State Entrance Laws

Two methods have been used in reporting age information. The first was to convert all birth dates to the age of the students in months as of September 1, 1970. The majority of second graders for the 69-70 school year would have begun the third grade on approximately this date. Similarly, the fourth graders of the 69-70 school year would be expected to begin fifth grade and the sixth graders would be expected to begin the seventh grade about September 1, 1970.

The second method was to estimate a child's age when entering the first grade based on his age as of September 1, 1970. This was accomplished by subtracting 24, 48 or 72 months from the ages as of September 1970 for second-, fourth- and sixth-grade students respectively. This made it possible to make relative comparisons using a comparable scale of months.

A procedure used to eliminate what appeared to be obvious reporting errors was to disregard data for any children whose estimated age for beginning the first grade was less than 3 years, 8 months in the computing of age means or standard deviations. The problem related to apparent error in the age information was discussed in the previous chapter. The number of children removed from age calculations by the above process was less than 1% of the total children considered.

Table 2.10 provides a summary of the estimated mean entrance age profile in months for various subpopulations in grades 2, 4, and 6. The information is organized according to the mean estimated entrance age for groups of states having entrance laws that require children to begin school by ages 6, 7, and 8 years. The fourth column in the tables shows the combined average, regardless of the entrance law.

Tables 2.11 through 2.14 show age profiles by state for children having preschool, not having preschool, having kindergarten, and not having kindergarten. The distributions are arranged by grades. Within each grade there are the number of students from the given state for that grade, the estimated mean entrance age in months for those students, the mean age in months as of September 1, 1970, and the standard deviation of the age distribution in months. In the right column is a summary of the age laws in effect when the majority of these students entered school. The first number indicates the age at which a student must be in school, while the second number indicates the age when a student may legally discontinue school.

Minimal variation of estimated mean entrance ages.

Examination of Table 2.10 indicates the minimal variation that exists in estimated mean entrance ages for various subpopulations. The range of

the means in Table 2.10 extends from 75.5 months to 80.44 months, a difference of slightly less than 5 months. The mean of the means for each of the columns in Table 2.10 was calculated to show the combined means, regardless of subpopulation. These, respectively, were found to be 77.96 months with a standard deviation of 1.25 for entrance law, 6 years; 78.2 months with a standard deviation of .99 for entrance law, 7 years; 77.67 months with a standard deviation of .79 for entrance law, 8 years; and the mean for the combined column was 78.45 with a standard deviation of 1.03. The lowest combined mean was for those states having entrance laws requiring a child to be in school by 8 years (the highest age law); the next lowest was for states requiring school entrance by 6 years; and the highest mean was for those states having entrance laws requiring a child to be in school by 7 years. Note that this is not a ranked order correspondence.

The question related to age laws is not whether there are statistically significant differences, but whether there are meaningful differences for the various subpopulations or for states having different entrance laws. Looking at the extent of the variation in the descriptive statistics shown in Table 2.10, the conclusion must be that for the national sample, there are no meaningful differences.

Frequency distributions by birth age in months were calculated for each of the subpopulations in states reporting. These distributions are not included in the report because of their volume; however, they were examined. The examination clearly indicated that the estimated predominate year when a child started school (estimates based upon their present age) was the year placing the child between 5 years 9 months and 6 years 8 months at September 1 of the beginning school year.

TABLE 2.10

Mean Age profile In Months

		School Age Entrance Law			
Preschool		6 years	7 years	8 years	Combined
Grade 2	$\bar{X}$	78.86	78.06	77.75	78.23
	S	2.97	1.46	2.22	1.80
Grade 4	$\bar{X}$	76.67	77.38	77.00	77.29
	S	1.21	2.13	1.83	1.92
Grade 6	$\bar{X}$	75.50	77.22	76.75	76.74
	S	0.84	2.06	2.22	2.05
No Preschool					
Grade 2	$\bar{X}$	78.00	79.06	77.75	78.81
	S	1.83	1.84	1.50	1.81
Grade 4	$\bar{X}$	78.17	79.30	77.50	79.13
	S	0.98	1.65	1.00	1.75
Grade 6	$\bar{X}$	77.86	78.97	77.50	78.70
	S	1.57	3.82	1.29	3.35
Kindergarten					
Grade 2	$\bar{X}$	77.57	78.62	77.50	78.32
	S	2.37	1.83	1.29	1.87
Grade 4	$\bar{X}$	77.33	77.76	77.00	77.58
	S	1.86	1.56	1.63	1.57
Grade 6	$\bar{X}$	77.29	77.79	76.75	77.60
	S	4.23	2.85	1.26	2.90
No Kindergarten					
Grade 2		78.43	79.70	78.75	79.42
	S	2.70	2.93	2.22	2.75
Grade 4	$\bar{X}$	80.00	80.44	78.75	80.36
	S	2.00	2.77	2.06	2.65
Grade 6	$\bar{X}$	79.83	79.15	79.00	79.26
	S	2.48	3.38	1.41	3.04

TABLE 2.11
AGE PROFILE BY STATE
PRESCHOOL

State	Grade 2				Grade 4				Grade 6				School Age Law (yrs.)
	No.	Est. Mean Entrance (mo.)	Mean Age (mo.)	Std. Age	No.	Est. Mean Entrance (mo.)	Mean Age (mo.)	Std. Age	No.	Est. Mean Entrance (mo.)	Mean Age (mo.)	Std. Age	
Alabama	173	79	103	6.4	79	79	127	9.5	29	79	151	9.5	7-16
Alaska	0	0	0	0	0	0	0	0	0	0	0	0	7-16
Arizona	28	75	99	5.3	29	76	124	5.0	15	75	147	4.6	8-16
Arkansas	57	79	103	6.6	47	79	127	6.0	3	78	150	2.7	7-16
California	183	80	104	13.2	108	78	126	10.0	92	76	148	5.9	8-16
Colorado	59	77	101	4.7	45	76	124	4.3	46	77	149	4.0	7-16
Connecticut	33	78	102	7.0	21	75	123	3.9	16	76	148	3.9	7-16
Delaware	1	-	-	-	2	74	122	4.0	3	81	153	7.6	7-16
Dist of Columbia	33	81	105	11.2	33	77	125	8.4	11	78	150	8.9	7-16
Florida	274	78	102	13.0	193	76	124	6.9	84	77	149	8.2	7-16
Georgia	153	78	102	13.1	104	77	125	8.5	47	78	150	10.3	7-16
Hawaii	96	75	99	5.5	85	75	123	4.2	27	75	147	4.8	6-16
Idaho	2	78	102	3.5	3	82	130	7.0	1	-	-	-	7-16
Illinois	281	77	101	9.9	129	77	125	6.0	43	76	148	8.1	7-16
Indiana	45	78	102	5.1	32	79	127	5.8	12	75	147	7.0	7-16
Iowa	28	79	103	4.3	9	77	125	3.5	3	78	150	4.2	7-16
Kansas	36	78	102	6.7	24	74	122	3.9	21	75	147	6.0	7-16
Kentucky	63	77	101	7.5	28	79	127	7.9	4	76	148	1.2	7-16
Louisiana	157	78	102	10.4	90	76	124	7.3	26	75	147	9.1	7-16
Maine	11	79	103	5.2	9	78	126	2.9	1	-	-	-	7-17
Maryland	43	76	100	5.7	10	79	127	9.4	14	80	152	9.2	7-16
Massachusetts	72	77	101	6.0	39	77	125	10.7	20	73	145	3.9	7-16
Michigan	54	80	104	9.4	70	76	124	7.7	6	76	148	1.5	6-16
Minnesota	64	77	101	5.8	31	75	123	4.9	20	74	146	4.3	7-16
Mississippi	168	80	104	11.7	57	79	127	9.0	11	74	146	7.2	none
Missouri	22	78	102	5.7	12	77	125	6.0	12	77	149	7.8	7-16
Montana	0	0	0	0	0	0	0	0	0	0	0	0	7-16
Nebraska	28	80	104	6.0	3	76	124	3.7	3	79	151	2.9	7-16
Nevada	1	-	-	-	0	0	0	0	0	0	0	0	7-17

TABLE 2.11 continued
AGE PROFILE BY STATE
PRESCHOOL

State	Grade 2				Grade 4				Grade 6				School Age Law (yrs.)
	No.	Est. Mean Entrance (mo.)	Mean Age (mo.)	Std. Age	No.	Est. Mean Entrance (mo.)	Mean Age (mo.)	Std. Age	No.	Est. Mean Entrance (mo.)	Mean Age (mo.)	Std. Age	
New Hampshire	4	84	108	5.3	0	0	0	0	0	0	0	0	6-16
New Jersey	154	78	102	9.7	86	76	124	7.3	32	76	148	4.8	6-16
New Mexico	73	76	100	4.7	49	77	125	4.7	2	74	146	1.6	6-17
New York	694	76	100	8.1	302	76	124	7.9	103	75	147	7.7	7-16
North Carolina	238	80	104	12.2	176	78	126	5.7	49	77	149	5.2	7-16
North Dakota	15	77	101	6.3	1	-	-	-	1	-	-	-	7-16
Ohio	219	80	104	10.4	109	78	126	8.6	50	76	148	7.7	6-18
Oklahoma	41	77	101	4.1	20	75	123	4.0	12	79	151	9.7	7-18
Oregon	36	76	100	4.8	20	76	124	3.9	16	80	152	5.5	7-18
Pennsylvania	114	77	101	9.7	70	75	123	5.5	35	76	148	7.8	8-17
Rhode Island	0	0	0	0	0	0	0	0	0	0	0	0	7-16
South Carolina	139	79	103	9.6	75	77	125	5.7	9	74	146	8.0	none
South Dakota	0	0	0	0	0	0	0	0	0	0	0	0	7-16
Tennessee	196	78	102	6.1	152	78	126	7.7	38	76	148	7.3	7-17
Texas	474	81	105	10.6	322	81	129	8.6	113	81	153	8.6	7-17
Utah	18	79	103	4.6	21	78	126	6.3	13	76	148	6.1	6-18
Vermont	2	79	103	0.7	1	-	-	-	1	-	-	-	7-16
Virginia	165	79	103	6.9	110	81	129	9.7	33	78	150	8.2	7-16
Washington	73	79	103	6.8	26	79	127	5.7	13	80	152	5.9	8-16
West Virginia	16	80	104	9.2	29	81	129	12.9	1	-	-	-	7-16
Wyoming	42	75	99	5.5	27	77	125	5.3	13	77	149	10.4	7-16
	0	0	0	0	0	0	0	0	0	0	0	0	7-17

TABLE 2.12
AGE PROFILE BY STATE
NO PRESCHOOL

State	Grade 2				Grade 4				Grade 6				School Age Law (yrs.)
	No.	Est. Mean Entrance (mo.)	Mean Age (mo.)	Std. Age	No.	Est. Mean Entrance (mo.)	Mean Age (mo.)	Std. Age	No.	Est. Mean Entrance (mo.)	Mean Age (mo.)	Std. Age	
Alabama	255	79	103	7.6	308	80	128	9.5	354	81	153	9.6	7-16
Alaska	0	0	0	0	0	0	0	0	0	0	0	0	7-16
Arizona	76	76	100	4.8	79	77	125	6.0	110	76	148	6.4	8-16
Arkansas	81	80	104	6.9	95	81	129	7.2	124	82	154	10.5	7-16
California	305	79	103	12.0	308	77	125	8.1	344	77	149	7.5	8-16
Colorado	77	79	103	10.5	104	79	127	10.1	102	77	149	6.7	7-16
Connecticut	93	79	103	7.9	93	79	127	8.1	96	81	153	11.9	7-16
Delaware	23	75	99	4.2	13	78	126	6.2	29	74	146	8.3	7-16
Dist of Columbia	43	76	100	5.3	48	84	132	13.9	62	86	158	11.4	7-16
Florida	482	78	102	11.0	566	78	126	7.4	680	78	150	7.8	7-16
Georgia	177	79	103	12.6	213	79	127	9.8	276	80	152	9.7	7-16
Hawaii	99	75	99	5.0	85	77	125	6.2	149	76	148	6.3	6-16
Idaho	28	78	102	4.5	31	78	126	5.8	26	80	152	5.8	7-16
Illinois	347	77	101	9.7	375	79	127	8.1	369	78	150	8.4	7-16
Indiana	156	80	104	9.1	166	81	129	8.4	142	80	152	8.1	7-16
Iowa	98	80	104	6.6	79	79	127	5.9	100	81	153	5.5	7-16
Kansas	96	78	102	6.7	113	78	126	9.9	113	76	148	5.4	7-16
Kentucky	168	79	103	9.5	177	78	126	7.3	225	79	151	9.3	7-16
Louisiana	213	78	102	10.8	236	80	128	10.1	222	79	151	9.9	7-16
Maine	38	80	104	7.4	35	79	127	6.6	19	84	156	12.5	7-17
Maryland	96	81	105	15.0	71	79	127	7.8	76	81	153	9.6	7-16
Massachusetts	160	79	103	9.5	144	78	126	10.0	120	78	150	7.9	7-16
Michigan	242	78	102	7.5	263	79	127	8.8	254	78	150	8.0	6-16
Minnesota	230	82	106	12.9	185	79	127	9.1	165	77	149	5.7	7-16
Mississippi	136	79	103	9.2	127	83	131	14.0	181	79	151	10.6	none
Missouri	63	81	105	9.1	67	78	126	5.3	117	80	152	8.7	7-16
Montana	0	0	0	0	0	0	0	0	0	0	0	0	7-16
Nebraska	52	79	103	7.4	32	79	127	5.7	29	79	151	6.6	7-16
Nevada	4	81	105	6.0	4	77	125	4.6	3	78	150	3.1	7-17

TABLE 2.12 continued
AGE PROFILE BY STATE
NO PRESCHOOL

State	Grade 2				Grade 4				Grade 6				School Age Law (yrs.)
	No.	Est. Mean Entrance (mo.)	Mean Age (mo.)	Std. Age	No.	Est. Mean Entrance (mo.)	Mean Age (mo.)	Std. Age	No.	Est. Mean Entrance (mo.)	Mean Age (mo.)	Std. Age	
New Hampshire	16	77	101	6.0	0	0	0	0	4	76	148	10.4	6-16
New Jersey	239	78	102	9.7	169	79	127	8.4	166	79	151	8.2	6-16
New Mexico	126	78	102	8.3	119	78	126	8.1	132	79	151	8.9	6-17
New York	1075	77	101	7.8	907	78	126	7.2	789	78	150	8.8	7-16
North Carolina	364	80	104	10.8	375	80	128	7.8	546	80	152	8.1	7-16
North Dakota	34	81	105	14.2	34	80	128	9.6	37	77	149	5.8	7-16
Ohio	447	79	103	7.5	425	79	127	7.6	445	80	152	7.6	6-18
Oklahoma	71	79	103	9.9	76	77	125	4.6	96	78	150	7.7	7-18
Oregon	89	78	102	5.9	75	79	127	10.0	116	80	152	7.3	7-18
Pennsylvania	429	77	101	8.9	456	77	125	9.7	428	78	150	8.6	8-17
Rhode Island	0	0	0	0	0	0	0	0	0	0	0	0	7-16
South Carolina	172	80	104	9.7	206	82	130	11.3	255	80	152	9.5	None
South Dakota	10	79	103	8.4	13	78	126	5.9	10	76	148	3.7	7-16
Tennessee	228	80	104	14.5	344	79	127	10.1	415	78	150	9.1	7-17
Texas	515	81	105	8.0	548	81	129	8.8	611	82	154	9.5	7-17
Utah	86	81	105	11.4	55	77	125	4.5	50	77	149	5.6	6-18
Vermont	7	74	98	2.8	0	0	0	0	2	63	135	4.0	7-16
Virginia	241	81	105	10.8	256	83	131	10.3	355	82	154	10.1	7-16
Washington	153	79	103	8.9	139	79	127	6.3	127	79	151	5.9	8-16
West Virginia	37	82	106	13.5	32	83	131	11.8	63	85	157	11.6	7-16
Wisconsin	177	78	102	6.9	156	79	127	9.9	162	77	149	6.6	7-16
Wyoming	0	0	0	0	0	0	0	0	0	0	0	0	7-17

TABLE 2.13
AGE PROFILE BY STATE
KINDERGARTEN

State	Grade 2				Grade 4				Grade 6				School Age Law (yrs.)
	No.	Est. Mean Entrance (mo.)	Mean Age (mo.)	Std. Age	No.	Est. Mean Entrance (mo.)	Mean Age (mo.)	Std. Age	No.	Est. Mean Entrance (mo.)	Mean Age (mo.)	Std. Age	
Alabama	294	79	103	9.6	272	79	127	7.1	254	77	149	6.8	7-16
Alaska	0	0	0	0	0	0	0	0	0	0	0	0	7-16
Arizona	111	76	100	5.1	80	75	123	5.2	86	75	147	5.0	8-16
Arkansas	61	82	106	13.6	64	77	125	5.6	49	77	149	7.2	7-16
California	1480	79	103	10.7	1256	77	125	7.3	1160	77	149	7.3	8-16
Colorado	344	79	103	11.3	307	78	126	7.8	260	78	150	7.6	7-16
Connecticut	262	79	103	8.5	235	78	126	6.8	227	79	151	9.5	7-16
Delaware	61	75	99	4.5	31	74	122	4.6	34	75	147	9.7	7-16
Dist of Columbia	228	79	103	13.0	258	81	129	8.9	201	84	156	10.2	7-16
Florida	692	77	101	10.1	669	77	125	7.3	536	77	149	7.4	7-16
Georgia	422	78	102	11.6	372	76	124	6.3	323	78	150	8.9	7-16
Hawaii	341	75	99	7.3	293	75	123	5.0	310	75	147	5.1	6-16
Idaho	38	78	102	6.2	39	77	125	5.0	27	78	150	4.7	7-16
Illinois	1272	77	101	10.4	1159	78	126	8.0	999	78	150	8.4	7-16
Indiana	492	80	104	8.3	397	80	128	8.1	392	80	152	7.7	7-16
Iowa	286	81	105	9.4	306	79	127	6.6	270	79	151	5.0	7-16
Kansas	336	79	103	8.5	309	77	125	7.3	270	76	148	6.0	7-16
Kentucky	79	77	101	7.4	60	78	126	7.7	31	79	151	9.7	7-16
Louisiana	379	77	101	8.4	322	78	126	8.9	227	80	152	10.3	7-16
Maine	81	80	104	7.1	71	79	127	6.0	42	83	155	16.0	7-17
Maryland	246	81	105	14.3	226	80	128	9.8	206	80	152	9.5	7-16
Massachusetts	380	79	103	10.4	326	76	124	8.2	223	76	148	7.5	7-16
Michigan	695	78	102	9.2	951	79	127	8.5	729	78	150	7.8	6-16
Minnesota	609	80	104	11.5	545	78	126	7.8	435	77	149	5.3	7-16
Mississippi	116	77	101	8.8	69	76	124	5.9	74	76	148	6.1	none
Missouri	213	78	102	7.3	174	78	126	7.9	151	78	150	10.3	7-16
Montana	0	0	0	0	0	0	0	0	0	0	0	0	7-16
Nebraska	143	80	104	9.2	111	79	127	5.6	98	81	153	8.8	7-16
Nevada	2	80	104	0	2	76	124	0.7	3	76	148	3.3	7-17

TABLE 2.13 Continued
AGE PROFILE BY STATE
KINDERGARTEN

State	Grade 2				Grade 4				Grade 6				School Age Law (yrs.)
	No.	Est. Mean Entrance (mo.)	Mean Age (mo.)	Std. Age	No.	Est. Mean Entrance (mo.)	Mean Age (mo.)	Std. Age	No.	Est. Mean Entrance (mo.)	Mean Age (mo.)	Std. Age	
New Hampshire	17	78	102	7.0	0	0	0	0	6	70	142	5.9	6-16
New Jersey	617	78	102	9.0	530	78	126	7.6	411	78	150	8.0	6-16
New Mexico	60	74	98	4.1	56	75	123	4.4	31	84	156	14.6	6-17
New York	2416	76	100	7.9	2090	76	124	6.9	1654	77	149	8.1	7-16
North Carolina	355	79	103	10.0	298	78	126	8.1	217	77	149	5.6	7-16
North Dakota	16	82	106	21.0	16	75	123	3.3	9	76	148	4.1	7-16
Ohio	1205	79	103	9.5	1093	79	127	8.9	1031	79	151	8.7	6-18
Oklahoma	225	78	102	8.6	194	76	124	6.4	162	78	150	8.4	7-18
Oregon	199	77	101	8.6	169	77	125	4.9	162	78	150	6.7	7-18
Pennsylvania	969	77	101	9.7	810	77	125	8.8	711	77	149	8.6	8-17
Rhode Island	0	0	0	0	0	0	0	0	0	0	0	0	7-16
South Carolina	149	78	102	10.0	131	77	125	7.2	86	78	150	8.1	none
South Dakota	25	78	102	6.4	21	78	126	6.1	17	74	146	7.1	7-16
Tennessee	331	78	102	11.8	298	77	125	7.4	197	76	148	7.6	7-17
Texas	861	81	105	8.7	684	80	128	7.7	550	81	153	9.2	7-17
Utah	246	81	105	10.9	178	78	126	5.5	179	77	149	5.1	6-18
Vermont	8	74	98	5.0	0	0	0	0	7	67	139	8.6	7-16
Virginia	253	79	103	7.7	199	80	128	12.1	194	79	151	9.3	7-16
Washington	406	78	102	7.0	347	79	127	6.9	264	78	150	5.5	8-16
West Virginia	19	77	101	5.9	19	78	126	5.3	5	79	151	3.4	7-16
Wisconsin	316	79	103	9.8	283	78	126	7.9	235	77	149	7.4	7-16
Wyoming	0	0	0	0	0	0	0	0	0	0	0	0	7-17

TABLE [illegible]4
AGE PROFILE BY STATE
NO KINDERGARTEN

State	Grade 2 No.	Grade 2 Est. Mean Entrance (mo.)	Grade 2 Mean Age (mo.)	Grade 2 Std. Age	Grade 4 No.	Grade 4 Est. Mean Entrance (mo.)	Grade 4 Mean Age (mo.)	Grade 4 Std. Age	Grade 6 No.	Grade 6 Est. Mean Entrance (mo.)	Grade 6 Mean Age (mo.)	Grade 6 Std. Age	School Age Law (yrs.)
Alabama	285	81	105	10.2	303	81	129	10.4	369	81	153	10.0	7-16
Alaska	0	0	0	0	0	0	0	0	0	0	0	0	7-16
Arizona	73	76	100	6.5	75	77	125	5.7	83	77	149	7.1	8-16
Arkansas	94	80	104	7.2	104	81	129	8.7	122	82	154	10.3	7-16
California	30	81	105	11.7	50	81	129	11.9	52	80	152	9.9	8-16
Colorado	9	82	106	6.9	19	78	126	4.6	21	77	149	8.2	7-16
Connecticut	0	0	0	0	5	85	133	10.7	12	78	150	5.1	7-16
Delaware	12	73	97	2.9	11	77	125	7.2	20	78	150	12.6	7-16
Dist. of Columbia	15	85	109	9.3	18	87	135	13.8	22	85	157	9.0	7-16
Florida	499	79	103	10.7	478	78	126	8.2	599	79	151	8.1	7-16
Georgia	178	80	104	13.4	190	81	129	10.8	225	81	153	10.3	7-16
Hawaii	17	76	100	5.8	20	78	126	6.0	21	81	153	11.8	6-16
Idaho	15	81	105	6.9	25	81	129	6.3	22	81	153	5.3	7-16
Illinois	54	79	103	11.4	97	82	130	8.9	97	79	151	9.9	7-16
Indiana	48	84	108	12.8	78	82	130	3.8	65	81	153	7.9	7-16
Iowa	4	72	96	7.9	5	78	126	3.8	3	80	152	6.1	7-16
Kansas	15	80	104	6.0	23	78	126	9.2	31	76	148	6.7	7-16
Kentucky	191	79	103	9.0	182	78	126	8.0	237	79	151	9.5	7-16
Louisiana	221	79	103	11.5	258	80	128	10.6	263	79	151	10.8	7-16
Maine	0	0	0	0	7	76	124	6.9	2	75	147	2.0	7-17
Maryland	28	82	106	14.3	25	84	132	10.9	25	83	155	10.1	7-16
Massachusetts	64	81	105	13.3	77	79	127	10.2	88	78	150	8.5	7-16
Michigan	16	79	103	9.9	23	78	126	8.1	23	81	153	6.7	6-16
Minnesota	20	82	106	13.9	38	81	129	9.1	36	77	149	7.1	7-16
Mississippi	153	80	104	10.0	121	84	132	14.2	170	80	152	11.2	None
Missouri	42	80	104	7.7	36	79	127	5.1	69	79	151	7.9	7-16
Montana	0	0	0	0	0	0	0	0	0	0	0	0	7-16
Nebraska	0	0	0	0	2	87	135	7.5	2	81	153	3.5	7-16
Nevada	5	77	101	7.6	3	75	123	3.5	3	78	150	3.1	7-17

TABLE 2.14 continued
AGE PROFILE BY STATE
NO KINDERGARTEN

State	Grade 2				Grade 4				Grade 6				School Age Law (yrs.)
	No.	Est. Mean Entrance (mo.)	Mean Age (mo.)	Std. Age	No.	Est. Mean Entrance (mo.)	Mean Age (mo.)	Std. Age	No.	Est. Mean Entrance (mo.)	Mean Age (mo.)	Std. Age	
New Hampshire	14	77	101	7.1	0	0	0	0	1	-	-	-	6-16
New Jersey	48	83	107	13.9	36	83	131	9.6	39	83	155	10.8	6-16
New Mexico	164	77	101	7.7	150	79	127	7.4	136	78	150	8.6	6-17
New York	379	78	102	8.6	336	80	128	8.4	291	80	152	9.5	7-16
North Carolina	402	80	104	9.6	395	81	129	7.9	521	80	152	8.2	7-16
North Dakota	42	80	104	12.8	29	80	128	10.2	39	78	150	6.9	7-16
Ohio	120	81	105	9.3	157	81	129	9.1	153	80	152	7.9	6-18
Oklahoma	24	81	105	13.4	41	79	127	6.7	54	77	149	7.6	7-18
Oregon	56	78	102	5.8	49	79	127	11.8	75	79	151	6.4	7-18
Pennsylvania	211	78	102	11.8	252	77	125	8.1	258	79	151	9.3	8-17
Rhode Island	0	0	0	0	0	0	0	0	0	0	0	0	7-16
South Carolina	226	80	104	9.6	223	83	131	11.5	257	80	152	9.7	none
South Dakota	0	0	0	0	0	0	0	0	2	80	152	1.0	7-16
Tennessee	289	80	104	10.0	376	80	128	10.0	434	79	151	9.4	7-17
Texas	571	83	107	10.1	558	82	130	9.4	596	82	154	9.2	7-17
Utah	3	76	100	4.7	2	81	129	7.5	2	76	148	4.0	6-18
Vermont	9	75	99	4.3	0	0	0	0	2	65	137	7.5	7-16
Virginia	229	81	105	11.2	279	83	131	10.4	330	83	155	10.5	7-16
Washington	54	80	104	6.0	77	80	128	7.9	79	80	152	6.1	8-16
West Virginia	40	83	107	13.5	41	82	130	11.6	71	84	156	11.9	7-16
Wisconsin	8	76	100	7.2	17	80	128	12.4	24	77	149	6.0	7-16
Wyoming	0	0	0	0	0	0	0	0	0	0	0	0	7-17

In a sample of 18,356 second-grade students with kindergarten, there was a jump from 73 students with an estimated entrance age of 5 years 8 months to 454 students with an estimated entrance age of 5 years 9 months. It appears that a child's actual school entry is not influenced in a meaningful way by entrance laws that permit school entry one or two years later.

Nominal and Ordinal Response Data for Selected Subpopulations

Tables 2.15 through 2.42 provide response data of selected subpopulations for questions meaningful to this study. All of the responses are to questions which generated either nominal or ordinal data. The question is presented at the top of each table with the meaning for the coded responses. These responses are indicated by values ranging from zero through a maximum of eleven. In many of the tables no more than two values (1 and 2) are used.

At the left of each table coded information identifies the various subpopulations. The number at the extreme left identifies the number of responses for a subpopulation. This is followed by either two or three letters. The possible combination of these letters with their meanings are: NPS--no preschool; WPS--with preschool; NK--no kindergarten; and WK--with kindergarten. After these two- or three-letter combinations there is one letter and one digit used to indicate the grade (G2 for grade 2, G4 for grade 4 and G6 for grade 6), and this is followed by four letters to indicate the socioeconomic status (LSES indicating a teacher judged the pupil to be "socioeconomically disadvantaged," and HSES indicating the teacher did not judge the pupil to be "socioeconomically disadvantaged").

TABLE 2.15

Response Per Thousand For Subpopulations
Question 7 Byte 37

7.37 Since the beginning of the first grade how many schools, including this school, has this pupil attended? (Do not include summer schools or schools that normally feed pupils into this school; include schools in this district as well as outside of this district.)

0 = ERROR
1 = (1)
2 = (2-3)
3 = (4-6)
4 = (7-10)
5 = (More than 10)
6 = (Don't Know)

N Subpopulations	Responses 0	1	2	3	4	5	6	7	8
1658 NPS G2 LSES	007	590	372	028	001	000	002		
1420 WPS G2 LSES	006	688	268	014	004	000	001		
1317 NK G2 LSES	006	588	372	025	002	000	006		
3094 WK G2 LSES	009	618	338	029	003	000	003		
6695 NPS G2 HSES	002	753	232	010	000	000	002		
3457 WPS G2 HSES	004	753	232	006	000	000	004		
3660 NK G2 HSES	004	733	247	011	000	000	005		
15262 WK G2 HSES	005	735	247	009	000	000	004		
1709 NPS G4 LSES	006	458	435	087	011	001	002		
749 WPS G4 LSES	008	546	386	057	001	001	000		
1419 NK G4 LSES	003	453	452	078	009	001	004		
2602 WK G4 LSES	008	467	417	092	008	001	007		
6704 NPS G4 HSES	003	574	367	050	002	000	005		
2139 WPS G4 HSES	007	601	337	046	001	001	006		
3872 NK G4 HSES	004	564	370	051	002	000	008		
13718 WK G4 HSES	005	568	371	049	001	000	005		
1903 NPS G6 LSES	006	366	468	131	016	004	009		
117 WPS G6 LSES	009	402	453	094	043	000	000		
1518 NK G6 LSES	007	389	461	115	018	003	008		
2043 WK G6 LSES	008	345	457	158	020	004	008		
7393 NPS G6 HSES	004	456	423	100	008	002	007		
987 WPS G6 HSES	007	427	434	117	013	002	001		
4527 NK G6 HSES	006	461	425	092	008	002	008		
11702 WK G6 HSES	007	468	420	090	008	001	006		

TABLE 2.16

Response Per Thousand For Subpopulations
Question 9 Byte 40

9.40 Considering his present attitude, how far do you think this pupil will go in school? NOTE: Consider only this pupil's attitude, not financial or family problems.

0 = ERROR
1 = 8th grade or less
2 = 9th grade or further, but not high school graduation
3 = Graduate from high school
4 = Post high school education except college
5 = Enter college

N	Subpopulations	Responses 0	1	2	3	4	5	6	7	8
1658	NPS G2 LSES	003	171	314	387	036	089			
1420	WPS G2 LSES	005	137	267	395	035	162			
1317	NK G2 LSES	005	241	303	371	027	053			
3094	WK G2 LSES	003	107	287	413	045	146			
6695	NPS G2 HSES	003	031	089	380	074	423			
3457	WPS G2 HSES	003	037	091	339	060	469			
3660	NK G2 HSES	004	059	129	414	065	329			
15262	WK G2 HSES	005	021	069	332	075	498			
1709	NPS G4 LSES	001	163	321	389	033	094			
749	WPS G4 LSES	004	085	263	407	057	183			
1419	NK G4 LSES	004	197	334	349	037	079			
2602	WK G4 LSES	002	093	289	427	043	147			
6704	NPS G4 HSES	003	033	098	371	079	416			
2139	WPS G4 HSES	003	019	086	290	063	539			
3872	NK G4 HSES	003	058	129	407	070	333			
13718	WK G4 HSES	003	017	083	323	075	500			
1903	NPS G6 LSES	002	108	328	408	038	116			
117	WPS G6 LSES	000	051	282	376	060	231			
1518	NK G6 LSES	001	122	338	403	031	105			
2043	WK G6 LSES	006	064	283	442	047	157			
7393	NPS G6 HSES	004	019	105	370	075	427			
987	WPS G6 HSES	004	005	063	222	059	647			
4527	NK G6 HSES	005	032	132	396	073	362			
11702	WK G6 HSES	004	009	083	321	076	507			

TABLE 2.17

Response Per Thousand For Subpopulations
Question 10 Byte 41

10.41 Considering his ability, how far do you think this pupil could go in school?
NOTE: Ability refers to your observation of the pupil's scholastic potential.

0 = ERROR
1 = 8th grade or less
2 = 9th grade or further, but not high school graduation
3 = Graduate from high school
4 = Post high school education except college
5 = Enter college

N	Subpopulations	Responses 0	1	2	3	4	5	6	7	8
1658	NPS G2 LSES	002	129	216	392	072	189			
1420	WPS G2 LSES	007	116	158	368	088	262			
1317	NK G2 LSES	002	185	216	379	072	147			
3094	WK G2 LSES	003	087	175	389	092	254			
6695	NPS G2 HSES	003	026	063	271	011	527			
3457	WPS G2 HSES	003	030	071	238	092	566			
3660	NK G2 HSES	003	048	096	310	104	439			
15262	WK G2 HSES	004	019	050	229	103	595			
1709	NPS G4 LSES	001	139	214	392	088	166			
749	WPS G4 LSES	003	075	172	362	095	294			
1419	NK G4 LSES	004	174	233	364	081	144			
2602	WK G4 LSES	002	072	180	389	103	254			
6704	NPS G4 HSES	005	030	072	268	115	510			
2139	WPS G4 HSES	003	020	059	221	095	603			
3872	NK G4 HSES	006	054	091	293	111	444			
13718	WK G4 HSES	004	018	061	233	107	577			
1903	NPS G6 LSES	002	103	219	389	091	196			
117	WPS G6 LSES	009	034	256	248	128	325			
1518	NK G6 LSES	001	121	242	375	079	183			
2043	WK G6 LSES	005	056	186	384	118	250			
7393	NPS G6 HSES	003	023	077	280	109	507			
987	WPS G6 HSES	003	005	044	168	094	686			
4527	NK G6 HSES	004	006	097	300	108	454			
11702	WK G6 HSES	003	012	057	240	106	581			

TABLE 2.18

Response Per Thousand For Subpopulations
Question 11 Byte 52

11.52 Persistent problem confronted by the pupil: Social Immaturity.

1 = unmarked 2 = marked

N	Subpopulations	Responses 0	1	2	3	4	5	6	7	8
1658	NPS G2 LSES		750	250						
1420	WPS G2 LSES		765	235						
1317	NK G2 LSES		762	238						
3094	WK G2 LSES		745	255						
6695	NPS G2 HSES		879	121						
3457	WPS G2 HSES		892	108						
3660	NK G2 HSES		889	111						
15262	WK G2 HSES		883	117						
1709	NPS G4 LSES		752	248						
749	WPS G4 LSES		796	204						
1419	NK G4 LSES		779	221						
2602	WK G4 LSES		741	259						
6704	NPS G4 HSES		877	123						
2139	WPS G4 HSES		879	121						
3872	NK G4 HSES		890	110						
13718	WK G4 HSES		875	125						
1903	NPS G6 LSES		786	214						
117	WPS G6 LSES		795	205						
1518	NK G6 LSES		810	190						
2043	WK G6 LSES		754	246						
7393	NPS G6 HSES		892	108						
987	WPS G6 HSES		881	119						
4527	NK G6 HSES		897	103						
11702	WK G6 HSES		882	118						

TABLE 2.19

Response Per Thousand For Subpopulations
Question 11 Byte 53

11.53 Emotional Problems create a persistent problem for this pupil.

1 = unmarked 2 = marked

N	Subpopulations	Responses 0	1	2	3	4	5	6	7	8
1658	NPS G2 LSES		780	220						
1420	WPS G2 LSES		816	184						
1317	NK G2 LSES		801	199						
3094	WK G2 LSES		761	239						
6695	NPS G2 HSES		912	088						
3457	WPS G2 HSES		908	092						
3660	NK G2 HSES		902	098						
15262	WK G2 HSES		912	088						
1709	NPS G4 LSES		759	241						
749	WPS G4 LSES		820	180						
1419	NK G4 LSES		789	211						
2602	WK G4 LSES		732	268						
6704	NPS G4 HSES		902	098						
2139	WPS G4 HSES		900	100						
3872	NK G4 HSES		904	096						
13718	WK G4 HSES		900	100						
1903	NPS G6 LSES		780	220						
117	WPS G6 LSES		769	231						
1518	NK G6 LSES		791	209						
2043	WK G6 LSES		762	238						
7393	NPS G6 HSES		913	047						
987	WPS G6 HSES		911	089						
4527	NK G6 HSES		915	085						
11702	WK G6 HSES		905	095						

TABLE 2.20

Response Per Thousand For Subpopulations
Question 11 Byte 54

11.54 Anti-Social Behavior creates a persistent problem for this pupil.

1 = unmarked 2 = marked

N	Subpopulations	Responses 0	1	2	3	4	5	6	7	8
1658	NPS G2 LSES		878	122						
1420	WPS G2 LSES		885	115						
1317	NK G2 LSES		875	125						
3094	WK G2 LSES		869	131						
6695	NPS G2 HSES		961	039						
3457	WPS G2 HSES		953	047						
3660	NK G2 HSES		959	041						
15262	WK G2 HSES		958	042						
1709	NPS G4 LSES		868	132						
749	WPS G4 LSES		896	104						
1419	NK G4 LSES		870	130						
2602	WK G4 LSES		862	138						
6704	NPS G4 HSES		955	045						
2139	WPS G4 HSES		950	050						
3872	NK G4 HSES		954	046						
13718	WK G4 HSES		950	050						
1903	NPS G6 LSES		872	128						
117	WPS G6 LSES		915	085						
1518	NK G6 LSES		885	115						
2043	WK G6 LSES		860	140						
7393	NPS G6 HSES		956	044						
987	WPS G6 HSES		954	046						
4527	NK G6 HSES		954	046						
11702	WK G6 HSES		953	047						

TABLE 2.21

Response Per Thousand For Subpopulations
Question 11 Byte 55

11.55 Malnutrition creates a persistent problem for this pupil.

1 = unmarked 2 = marked

N	Subpopulations	Responses 0	1	2	3	4	5	6	7	8
1658	NPS G2 LSES		951	049						
1420	WPS G2 LSES		970	030						
1317	NK G2 LSES		932	068						
3094	WK G2 LSES		869	131						
6695	NPS G2 HSES		998	002						
3457	WPS G2 HSES		998	002						
3660	NK G2 HSES		995	005						
15262	WK G2 HSES		998	002						
1709	NPS G4 LSES		962	038						
749	WPS G4 LSES		965	035						
1419	NK G4 LSES		945	055						
2602	WK G4 LSES		979	021						
6704	NPS G4 HSES		998	002						
2139	WPS G4 HSES		996	004						
3872	NK G4 HSES		996	004						
13718	WK G4 HSES		999	001						
1903	NPS G6 LSES		977	023						
117	WPS G6 LSES		966	034						
1518	NK G6 LSES		969	031						
2043	WK G6 LSES		982	018						
7393	NPS G6 HSES		997	003						
987	WPS G6 HSES		999	001						
4527	NK G6 HSES		996	004						
11702	WK G6 HSES		998	002						

TABLE 2.22

Response Per Thousand For Subpopulations
Question 11 Byte 56

11.56 Family Instability creates a persistent problem for this pupil.

1 = unmarked 2 = marked

N	Subpopulations	Responses 0	1	2	3	4	5	6	7	8
1658	NPS G2 LSES		619	381						
1420	WPS G2 LSES		685	315						
1317	NK G2 LSES		594	406						
3094	WK G2 LSES		655	345						
6695	NPS G2 HSES		913	087						
3457	WPS G2 HSES		918	082						
3660	NK G2 HSES		890	110						
15262	WK G2 HSES		922	078						
1709	NPS G4 LSES		633	367						
749	WPS G4 LSES		725	275						
1419	NK G4 LSES		640	360						
2602	WK G4 LSES		665	335						
6704	NPS G4 HSES		905	095						
2139	WPS G4 HSES		917	083						
3872	NK G4 HSES		890	110						
13718	WK G4 HSES		919	081						
1903	NPS G6 LSES		659	341						
117	WPS G6 LSES		684	316						
1518	NK G6 LSES		674	326						
2043	WK G6 LSES		681	319						
7393	NPS G6 HSES		915	085						
987	WPS G6 HSES		919	081						
4527	NK G6 HSES		903	097						
11702	WK G6 HSES		921	079						

TABLE 2.23

Response Per Thousand For Subpopulation
Question 12 Byte 63

12.63 Should this pupil be classified as being a potential dropout?

1 = unmarked 2 = marked

N	Subpopulations	Responses 0	1	2	3	4	5	6	7	8
1658	NPS G2 LSES		723	277						
1420	WPS G2 LSES		786	214						
1317	NK G2 LSES		696	304						
3094	WK G2 LSES		788	212						
6695	NPS G2 HSES		942	058						
3457	WPS G2 HSES		952	048						
3660	NK G2 HSES		928	072						
15262	WK G2 HSES		957	043						
1709	NPS G4 LSES		692	308						
749	WPS G4 LSES		785	215						
1419	NK G4 LSES		673	327						
2602	WK G4 LSES		759	241						
6704	NPS G4 HSES		930	070						
2139	WPS G4 HSES		948	052						
3872	NK G4 HSES		908	092						
13718	WK G4 HSES		947	053						
1903	NPS G6 LSES		686	314						
117	WPS G6 LSES		769	231						
1518	NK G6 LSES		674	326						
2043	WK G6 LSES		744	256						
7393	NPS G6 HSES		916	084						
987	WPS G6 HSES		946	054						
4527	NK G6 HSES		898	102						
11702	WK G6 HSES		934	066						

TABLE 2.24

Response Per Thousand For Subpopulations
Question 12 Byte 66

12.66 Should this pupil be classified as being a neglected or delinquent pupil?

1 = unmarked 2 = marked

N Subpopulations	Responses 0	1	2	3	4	5	6	7	8
1658 NPS G2 LSES		889	111						
1420 WPS G2 LSES		945	055						
1317 NK G2 LSES		901	099						
3094 WK G2 LSES		919	081						
6695 NPS G2 HSES		990	010						
3457 WPS G2 HSES		986	014						
3660 NK G2 HSES		985	015						
15262 WK G2 HSES		990	010						
1709 NPS G4 LSES		908	092						
749 WPS G4 LSES		944	056						
1419 NK G4 LSES		907	093						
2602 WK G4 LSES		931	069						
6704 NPS G4 HSES		989	011						
2139 WPS G4 HSES		991	009						
3872 NK G4 HSES		985	015						
13718 WK G4 HSES		990	010						
1903 NPS G6 LSES		914	084						
117 WPS G6 LSES		949	051						
1518 NK G6 LSES		917	083						
2043 WK G6 LSES		925	075						
7393 NPS G6 HSES		986	104						
987 WPS G6 HSES		991	009						
4527 NK G6 HSES		986	014						
11702 WK G6 HSES		988	012						

TABLE 2.25

Response Per Thousand For Subpopulations
Question 13 Byte 69

13.69 Indicate below if this pupil is a member of any of the following racial or national origin groups.

1 = American Indian
2 = Negro
3 = Oriental
4 = Spanish-surnamed American (persons of Cuban, Mexican, or Puerto Rican descent)
5 = None of the above

N Subpopulations	0	1	2	3	4	5	6	7	8
1658 NPS G2 LSES	11	8	461	2	231	286			
1420 WPS G2 LSES	9	4	649	4	199	135			
1317 NK G2 LSES	12	5	483	2	216	282			
3094 WK G2 LSES	12	8	583	4	174	220			
6695 NPS G2 HSES	16	3	138	12	69	762			
3457 WPS G2 HSES	14	2	409	17	97	461			
3660 NK G2 HSES	21	3	186	5	104	680			
15262 WK G2 HSES	17	3	193	17	47	722			
1709 NPS G4 LSES	8	5	494	6	194	293			
749 WPS G4 LSES	13	8	673	4	198	104			
1419 NK G4 LSES	11	3	507	1	203	276			
2602 WK G4 LSES	13	7	614	6	145	216			
6704 NPS G4 HSES	16	2	148	13	58	762			
2139 WPS G4 HSES	16	2	381	23	83	494			
3872 NK G4 HSES	23	2	170	6	78	720			
13718 WK G4 HSES	18	2	206	18	43	713			
1903 NPS G6 LSES	10	10	569	2	144	265			
117 WPS G6 LSES	9	0	769	0	137	85			
1518 NK G6 LSES	8	13	560	1	134	284			
2043 WK G6 LSES	9	2	651	5	126	206			
7393 NPS G6 HSES	17	64	184	15	54	728			
987 WPS G6 HSES	15	1	245	24	37	677			
4527 NK G6 HSES	21	4	218	5	69	682			
11702 WK G6 HSES	16	2	201	20	41	720			

TABLE 2.26

Response Per Thousand For Subpopulations
Question 19 Byte 75

19.75 What is the relationship of the head of this pupil's household to this pupil?

1 = Father
2 = Mother
3 = Uncle
4 = Aunt
5 = Grandparent
6 = Older brother or sister
7 = Other
8 = Don't Know

N	Subpopulations	Responses 0	1	2	3	4	5	6	7	8
1658	NPS G2 LSES	22	577	314	3	5	30	1	30	18
1420	WPS G2 LSES	18	530	360	4	6	37	3	26	18
1317	NK G2 LSES	26	580	295	3	5	36	3	36	17
3094	WK G2 LSES	17	526	366	3	4	31	2	28	24
6695	NPS G2 HSES	14	859	86	2	1	11	1	22	3
3457	WPS G2 HSES	22	765	157	3	2	24	1	20	8
3660	NK G2 HSES	17	817	110	3	2	17	1	28	5
15262	WK G2 HSES	19	838	102	2	1	10	1	21	6
1709	NPS G4 LSES	19	555	325	4	5	45	2	28	18
749	WPS G4 LSES	8	545	356	3	5	47	0	20	16
1419	NK G4 LSES	20	561	316	4	8	44	1	26	20
2602	WK G4 LSES	24	508	374	3	5	34	2	627	25
6704	NPS G4 HSES	18	840	96	2	1	13	1	25	3
2139	WPS G4 HSES	22	781	143	3	2	20	1	24	5
3872	NK G4 HSES	25	806	112	3	2	18	1	29	4
13718	WK G4 HSES	21	831	107	1	1	10	1	23	6
1903	NPS G6 LSES	25	549	319	7	7	43	5	34	10
117	WPS G6 LSES	43	419	436	9	17	31	17	9	0
1518	NK G6 LSES	428	562	291	7	7	47	6	36	15
2043	WK G6 LSES	28	497	376	7	5	30	4	32	20
7393	NPS G6 HSES	16	830	104	2	3	14	1	27	3
987	WPS G6 HSES	12	822	124	0	5	7	2	26	2
4527	NK G6 HSES	18	803	121	3	4	15	2	31	3
11702	WK G6 HSES	19	829	110	1	2	10	1	24	5

TABLE 2.27

Response Per Thousand For Subpopulations
Question 20 Byte 76

20.76 Is this pupil's family receiving welfare payments?

1 = Yes 2 = No 3 = Don't Know

N Subpopulations	Response 0	1	2	3	4	5	6	7	8
1658 NPS G2 LSES	23	380	307	290					
1420 WPS G2 LSES	21	373	321	280					
1317 NK G2 LSES	19	331	357	293					
3094 WK G2 LSES	22	378	288	313					
6695 NPS G2 HSES	17	41	857	85					
3457 WPS G2 HSES	24	82	764	130					
3660 NK G2 HSES	20	60	812	108					
15262 WK G2 HSES	20	39	842	98					
1709 NPS G4 LSES	20	366	356	258					
749 WPS G4 LSES	27	308	398	267					
1419 NK G4 LSES	23	352	380	245					
2602 WK G4 LSES	24	340	331	306					
6704 NPS G4 HSES	17	44	861	78					
2139 WPS G4 HSES	23	67	816	94					
3872 NK G4 HSES	25	59	823	93					
13718 WK G4 HSES	21	39	847	93					
1903 NPS G6 LSES	22	334	428	216					
117 WPS G6 LSES	34	316	513	137					
1518 NK G6 LSES	28	306	450	217					
2043 WK G6 LSES	22	322	372	284					
7393 NPS G6 HSES	21	47	871	61					
987 WPS G6 HSES	17	25	918	40					
4527 NK G6 HSES	24	61	843	72					
11702 WK G6 HSES	21	39	865	76					

TABLE 2.28

Response Per Thousand For Subpopulations
Question 20 Byte 77

20.77 Indicate the usual employment status of the head of this pupil's household.

0 = ERROR
1 = Regularly employed
2 = Seasonally employed
3 = Chronically unemployed
4 = Don't Know

N	Subpopulations	Response 0	1	2	3	4	5	6	7	8
1658	NPS G2 LSES	43	439	77	183	258				
1420	WPS G2 LSES	51	480	70	165	235				
1317	NK G2 LSES	51	453	86	174	236				
3094	WK G2 LSES	49	433	63	157	298				
6695	NPS G2 HSES	30	859	20	25	66				
3457	WPS G2 HSES	40	799	33	32	97				
3660	NK G2 HSES	40	809	34	32	79				
15262	WK G2 HSES	34	852	15	15	84				
1709	NPS G4 LSES	43	486	91	183	197				
749	WPS G4 LSES	40	547	67	158	188				
1419	NK G4 LSES	44	498	101	178	180				
2602	WK G4 LSES	43	470	63	153	270				
6704	NPS G4 HSES	29	868	22	25	56				
2139	WPS G4 HSES	34	845	22	35	64				
3872	NK G4 HSES	42	831	31	31	65				
13718	WK G4 HSES	33	862	14	18	74				
1903	NPS G6 LSES	54	496	85	196	169				
117	WPS G6 LSES	17	641	60	154	128				
1518	NK G6 LSES	63	503	90	184	160				
2043	WK G6 LSES	50	484	53	160	253				
7393	NPS G6 HSES	34	820	24	28	44				
987	WPS G6 HSES	31	908	12	19	29				
4527	NK G6 HSES	58	858	32	33	59				
11702	WK G6 HSES	37	865	16	20	63				

TABLE 2.29

Response Per Thousand For Subpopulations
Question 21 Byte 78/79

21.78/79 Indicate below the one most appropriate option describing the the usual occupation of the person who is the primary supporter of this pupil's family.

0 = ERROR
1 = Farmworker
2 = Farm Manager or owner
3 = Unskilled worker, laborer or domestic worker
4 = Semi-skilled worker
5 = Skilled worker
6 = Sales agents and Representatives
7 = Technical
8 = Manager or foreman
9 = Official
10 = Professional
11 = Don't know

N	Subpopulations	Responses 0	1	2	3	4	5	6	7	8	9	10	11
1658	NPS G2 LSES	280	030	005	277	155	049	004	002	004	002	002	191
1420	WPS G2 LSES	269	024	001	325	170	043	003	001	002	000	003	135
1317	NK G2 LSES	260	039	007	326	153	054	002	005	002	000	000	152
3094	WK G2 LSES	287	012	002	250	176	047	006	002	004	001	003	212
6695	NPS G2 HSES	069	007	025	136	243	186	050	033	076	016	079	080
3457	WPS G2 HSES	106	010	010	186	210	114	047	027	052	019	111	107
3660	NK G2 HSES	082	015	025	166	252	194	036	028	056	009	045	090
15262	WK G2 HSES	078	004	015	111	210	162	062	038	075	022	114	108
1709	NPS G4 LSES	263	042	004	312	173	053	002	005	002	001	004	139
749	WPS G4 LSES	235	027	000	355	180	061	004	000	005	000	005	129
1419	NK G4 LSES	247	054	004	354	159	054	004	005	005	002	001	111
2602	WK G4 LSES	266	009	003	275	187	053	003	002	004	001	005	198
6704	NPS G4 HSES	070	104	027	136	242	190	053	033	075	017	073	073
2139	WPS G4 HSES	102	010	005	169	194	146	046	030	057	024	141	075
3872	NK G4 HSES	085	015	031	171	247	183	042	031	061	012	043	080
13718	WK G4 HSES	078	004	014	114	208	163	063	040	077	022	116	100
1903	NPS G6 LSES	281	039	006	300	175	057	003	006	007	001	006	119
117	WPS G6 LSES	214	025	000	402	162	094	000	001	001	000	000	090
1518	NK G6 LSES	265	048	008	320	169	064	003	004	007	001	004	106
2043	WK G6 LSES	274	008	002	261	168	047	005	005	007	001	008	194
7393	NPS G6 HSES	071	012	025	141	250	186	048	036	075	019	075	061
987	WPS G6 HSES	061	001	005	079	152	162	094	042	096	040	209	059
4527	NK G6 HSES	085	021	031	175	247	185	041	028	063	011	053	060
11702	WK G6 HSES	074	003	013	100	212	177	063	042	084	026	114	092

TABLE 2.30

Response Per Thousand For Subpopulations
Question 22 Byte 80

22.80 Is this pupil's mother employed?

0 = ERROR
1 = Mother is deceased
2 = No mother in the home
3 = Yes, part-time or seasonal work
4 = Yes, full-time or steady work
5 = No
6 = Don't Know

N	Subpopulations	Response 0	1	2	3	4	5	6	7	8
1658	NPS G2 LSES	7	10	109	137	179	441	121		
1420	WPS G2 LSES	12	11	115	158	233	356	115		
1317	NK G2 LSES	8	16	119	140	188	422	107		
3094	WK G2 LSES	10	12	116	130	197	389	146		
6695	NPS G2 HSES	9	4	109	117	236	494	32		
3457	WPS G2 HSES	14	9	91	122	336	375	53		
3660	NK G2 HSES	12	7	90	100	274	476	42		
15262	WK G2 HSES	10	4	105	122	246	461	53		
1709	NPS G4 LSES	13	18	104	135	206	422	102		
749	WPS G4 LSES	11	19	100	128	270	368	104		
1419	NK G4 LSES	10	20	110	131	218	414	97		
2602	WK G4 LSES	10	19	106	134	221	364	147		
6704	NPS G4 HSES	11	9	99	121	269	453	39		
2139	WPS G4 HSES	9	8	86	106	357	391	43		
3872	NK G4 HSES	11	10	90	111	287	446	46		
13718	WK G4 HSES	10	7	106	121	268	428	60		
1903	NPS G6 LSES	12	25	119	137	233	388	86		
117	WPS G6 LSES	9	34	68	162	385	274	68		
1518	NK G6 LSES	15	26	109	134	237	390	89		
2043	WK G6 LSES	13	25	110	120	243	336	153		
7393	NPS G6 HSES	8	11	101	124	297	421	39		
987	WPS G6 HSES	6	10	110	116	372	359	27		
4527	NK G6 HSES	11	12	95	114	312	408	48		
11702	WK G6 HSES	7	8	109	124	288	396	67		

TABLE 2.31

Response Per Thousand For Subpopulations
Question 26 Byte 89

26.89 Estimate the educational level of the head of this pupil's household.

0 = ERROR
1 = Little or no education
2 = Probably completed grade school
3 = Probably some high school
4 = Probably completed high school
5 = Probably some post high school training but not college
6 = Probably some college
7 = Probably completed college
8 = Probably some graduate school education

N	Subpopulations	Response 0	1	2	3	4	5	6	7	8
1658	NPS G2 LSES	297	146	216	239	89	8	4	2	1
1420	WPS G2 LSES	341	139	209	197	92	13	7	1	1
1317	NK G2 LSES	282	190	228	224	67	5	4	2	0
3094	WK G2 LSES	342	94	191	232	117	13	8	1	1
6695	NPS G2 HSES	87	28	93	168	343	88	80	77	36
3457	WPS G2 HSES	147	36	118	187	227	58	63	93	70
3660	NK G2 HSES	107	48	138	217	305	70	62	37	16
15262	WK G2 HSES	107	14	63	138	314	96	99	109	60
1709	NPS G4 LSES	288	174	207	215	95	8	11	2	1
749	WPS G4 LSES	292	143	234	202	96	17	13	3	0
1419	NK G4 LSES	271	212	235	185	74	10	13	1	0
2602	WK G4 LSES	337	87	191	234	125	11	9	3	1
6704	NPS G4 HSES	92	32	105	183	318	81	76	78	36
2139	WPS G4 HSES	141	29	100	163	221	62	85	111	89
3872	NK G4 HSES	110	54	146	211	290	68	61	44	17
13718	WK G4 HSES	104	15	63	151	310	86	94	111	66
1903	NPS G6 LSES	286	183	223	211	86	9	5	2	1
117	WPS G6 LSES	325	77	214	239	94	17	17	17	0
1518	NK G6 LSES	260	206	236	211	76	7	4	1	1
2043	WK G6 LSES	315	89	207	241	118	16	10	4	0
7393	NPS G6 HSES	98	43	115	187	293	78	76	74	36
987	WPS G6 HSES	111	17	45	101	189	73	136	179	145
4527	NK G6 HSES	116	61	160	204	265	69	55	49	21
11702	WK G6 HSES	106	16	62	157	307	85	95	107	64

TABLE 2.32

Response Per Thousand For Subpopulations
Question 26 Byte 90

26.90 Estimate the educational levels of this pupil's mother.

0 = ERROR
1 = Little or no education
2 = Probably completed grade school
3 = Probably some high school
4 = Probably completed high school
5 = Probably some post high school training but not college
6 = Probably some college
7 = Probably completed college
8 = Probably some graduate school education

N	Subpopulations	Response 0	1	2	3	4	5	6	7	8
1658	NPS G2 LSES	134	167	260	316	109	8	4	1	2
1420	WPS G2 LSES	164	135	270	290	121	8	9	1	1
1317	NK G2 LSES	162	194	292	267	80	2	4	1	1
3094	WK G2 LSES	158	113	238	326	146	13	6	1	1
6695	NPS G2 HSES	105	23	80	197	418	45	75	51	6
3457	WPS G2 HSES	158	32	96	192	287	50	84	77	25
3660	NK G2 HSES	136	38	125	243	352	36	44	23	4
15262	WK G2 HSES	134	14	52	154	391	59	104	76	16
1709	NPS G4 LSES	128	176	263	284	129	9	11	1	0
749	WPS G4 LSES	148	147	247	295	138	7	13	4	1
1419	NK G4 LSES	147	211	273	257	94	6	10	1	0
2602	WK G4 LSES	146	103	223	317	178	15	13	3	1
6704	NPS G4 HSES	104	30	89	189	398	57	70	54	10
2139	WPS G4 HSES	129	25	89	181	285	57	99	101	34
3872	NK G4 HSES	131	44	132	227	346	43	45	25	6
13718	WK G4 HSES	129	14	56	254	380	63	99	84	20
1903	NPS G6 LSES	154	171	251	282	115	14	9	3	1
117	WPS G6 LSES	154	94	197	308	179	34	34	0	0
1518	NK G6 LSES	174	178	252	287	94	8	6	3	0
2043	WK G6 LSES	163	100	229	300	167	22	13	4	1
7393	NPS G6 HSES	105	31	95	210	375	50	71	53	10
987	WPS G6 HSES	129	13	32	93	88	69	147	167	62
4527	NK G6 HSES	124	46	129	244	330	41	49	30	8
11702	WK G6 HSES	129	13	53	160	385	61	97	81	21

TABLE 2.33

Response Per Thousand For Subpopulations
Question 39 Byte 199

39.199 Diagnostic assesment of academic, social, or emotional programs.

0 = ERROR
1 = Pupil received service
2 = Pupil needed service
3 = Pupil did not need service
4 = Activity not available

N	Subpopulations	Responses 0	1	2	3	4	5	6	7	8
1658	NPS G2 LSES	59	189	157	427	169				
1420	WPS G2 LSES	58	197	116	476	153				
1317	NK G2 LSES	84	178	148	391	198				
3094	WK G2 LSES	70	206	136	464	123				
6695	NPS G2 HSES	37	136	55	640	132				
3457	WPS G2 HSES	62	137	54	613	133				
3660	NK G2 HSES	58	118	61	573	190				
15262	WK G2 HSES	56	138	50	664	92				
1709	NPS G4 LSES	66	245	171	361	157				
749	WPS G4 LSES	63	255	113	433	136				
1419	NK G4 LSES	86	245	167	322	180				
2602	WK G4 LSES	74	231	168	418	110				
6704	NPS G4 HSES	41	160	58	613	128				
2139	WPS G4 HSES	58	173	51	602	116				
3872	NK G4 HSES	65	151	60	533	191				
13718	WK G4 HSES	53	166	54	649	79				
1903	NPS G6 LSES	56	279	156	333	177				
117	WPS G6 LSES	43	222	171	342	222				
1518	NK G6 LSES	63	269	152	324	192				
2043	WK G6 LSES	73	259	160	377	131				
7393	NPS G6 HSES	45	190	53	565	147				
987	WPS G6 HSES	61	183	41	622	93				
4527	NK G6 HSES	60	182	56	510	193				
11702	WK G6 HSES	51	199	49	612	89				

TABLE 2.34

Response Per Thousand For Subpopulations
Question 39 Byte 200

39.200 Case conference with teacher and other school personnel regarding problems of this pupil.

0 = ERROR
1 = Pupil received service
2 = Pupil needed service
3 = Pupil did not need service
4 = Activity not available

N	Subpopulations	Responses 0	1	2	3	4	5	6	7	8
1658	NPS G2 LSES	63	224	137	497	79				
1420	WPS G2 LSES	67	244	89	537	63				
1317	NK G2 LSES	86	214	140	463	97				
3094	WK G2 LSES	73	240	107	528	51				
6695	NPS G2 HSES	41	127	40	723	68				
3457	WPS G2 HSES	65	114	38	721	62				
3660	NK G2 HSES	59	107	50	686	98				
15262	WK G2 HSES	60	126	36	734	45				
1709	NPS G4 LSES	60	272	136	468	65				
749	WPS G4 LSES	64	262	91	518	65				
1419	NK G4 LSES	80	256	135	440	89				
2602	WK G4 LSES	68	264	140	491	37				
6704	NPS G4 HSES	43	128	48	719	63				
2139	WPS G4 HSES	64	129	39	717	51				
3872	NK G4 HSES	65	137	56	656	86				
13718	WK G4 HSES	57	128	42	736	37				
1903	NPS G6 LSES	54	288	124	460	72				
117	WPS G6 LSES	43	239	111	547	60				
1518	NK G6 LSES	55	271	132	451	90				
2043	WK G6 LSES	66	281	126	478	49				
7393	NPS G6 HSES	46	136	46	703	69				
987	WPS G6 HSES	65	133	41	720	42				
4527	NK G6 HSES	61	137	51	662	89				
11702	WK G6 HSES	53	136	43	731	38				

TABLE 2.35

Response Per Thousand For Subpopulations
Question 39 Byte 201

39.201 Individual Counseling.

0 = ERROR
1 = Pupil received service
2 = Pupil needed service
3 = Pupil did not need service
4 = Activity not available

N	Subpopulations	Responses 0	1	2	3	4	5	6	7	8
1658	NPS G2 LSES	65	143	144	506	142				
1420	WPS G2 LSES	68	181	108	518	124				
1317	NK G2 LSES	86	167	150	440	157				
3094	WK G2 LSES	77	154	121	523	125				
6695	NPS G2 HSES	39	86	42	696	137				
3457	WPS G2 HSES	61	109	42	672	116				
3660	NK G2 HSES	64	94	46	629	167				
15262	WK G2 HSES	58	89	41	709	104				
1709	NPS G4 LSES	60	205	150	444	140				
749	WPS G4 LSES	63	211	99	481	147				
1419	NK G4 LSES	82	214	143	411	151				
2602	WK G4 LSES	76	201	160	456	106				
6704	NPS G4 HSES	43	109	58	648	141				
2139	WPS G4 HSES	70	126	52	644	108				
3872	NK G4 HSES	63	128	63	580	167				
13718	WK G4 HSES	58	107	54	678	103				
1903	NPS G6 LSES	56	267	161	365	150				
117	WPS G6 LSES	43	248	94	427	188				
1518	NK G6 LSES	59	263	153	364	162				
2043	WK G6 LSES	69	265	147	397	122				
7393	NPS G6 HSES	45	151	53	606	144				
987	WPS G6 HSES	56	150	76	634	90				
4527	NK G6 HSES	60	160	58	566	157				
11702	WK G6 HSES	54	146	56	635	107				

TABLE 2.36

Response Per Thousand For Subpopulations
Question 39 Byte 202

39.202 Group Counseling.

0 = ERROR
1 = Pupil received service
2 = Pupil needed service
3 = Pupil did not need service
4 = Activity not available

N	Subpopulations	Responses 0	1	2	3	4	5	6	7	8
1658	NPS G2 LSES	74	65	68	551	242				
1420	WPS G2 LSES	76	94	58	551	220				
1317	NK G2 LSES	96	90	70	497	247				
3094	WK G2 LSES	89	62	60	571	218				
6695	NPS G2 HSES	45	49	14	686	206				
3457	WPS G2 HSES	69	70	23	666	172				
3660	NK G2 HSES	70	69	17	618	227				
15262	WK G2 HSES	67	43	16	704	169				
1709	NPS G4 LSES	74	118	83	480	245				
749	WPS G4 LSES	85	124	49	541	200				
1419	NK G4 LSES	93	123	78	459	247				
2602	WK G4 LSES	93	95	85	511	216				
6704	NPS G4 HSES	46	63	26	647	218				
2139	WPS G4 HSES	75	69	27	662	167				
3872	NK G4 HSES	73	82	33	582	231				
13718	WK G4 HSES	65	44	26	690	175				
1903	NPS G6 LSES	67	166	97	405	265				
117	WPS G6 LSES	68	171	103	427	231				
1518	NK G6 LSES	66	173	96	410	256				
2043	WK G6 LSES	90	138	88	447	238				
7393	NPS G6 HSES	53	99	24	610	214				
987	WPS G6 HSES	59	102	31	637	170				
4527	NK G6 HSES	69	120	26	561	224				
11702	WK G6 HSES	58	87	26	648	180				

TABLE 2.37

Response Per Thousand For Subpopulations
Question 39 Byte 203

39.203 Psychological Treatment Activity.

0 = ERROR
1 = Pupil received service
2 = Pupil needed service
3 = Pupil did not need service
4 = Activity not available

N Subpopulations	Responses 0	1	2	3	4	5	6	7	8
1658 NPS G2 LSES	76	16	88	641	179				
1420 WPS G2 LSES	99	19	72	650	160				
1317 NK G2 LSES	109	8	87	591	205				
3094 WK G2 LSES	101	28	82	656	132				
6694 NPS G2 HSES	49	9	27	755	160				
3457 WPS G2 HSES	77	6	26	748	143				
3660 NK G2 HSES	72	8	27	690	203				
15262 WK G2 HSES	70	9	24	782	116				
1709 NPS G4 LSES	87	16	88	612	197				
749 WPS G4 LSES	104	17	55	656	168				
1419 NK G4 LSES	116	12	93	570	209				
2602 WK G4 LSES	105	23	101	648	123				
6704 NPS G4 HSES	54	8	31	740	166				
2139 WPS G4 HSES	78	10	27	757	128				
3872 NK G4 HSES	84	8	33	677	199				
13718 WK G4 HSES	67	9	31	780	114				
1903 NPS G6 LSES	77	14	91	587	231				
117 WPS G6 LSES	26	17	77	726	154				
1518 NK G6 LSES	89	13	84	557	258				
2043 WK G6 LSES	90	25	101	638	146				
7393 NPS G6 HSES	55	7	22	746	170				
987 WPS G6 HSES	77	12	25	761	125				
4527 NK G6 HSES	74	5	22	697	202				
11702 WK G6 HSES	65	9	28	788	109				

TABLE 2.38

Response Per Thousand For Subpopulations
Question 39 Byte 204

39.204 Home Visitation Activity.

0 = ERROR
1 = Pupil received service
2 = Pupil needed service
3 = Pupil did not need service
4 = Activity not available

N	Subpopulations	Responses 0	1	2	3	4	5	6	7	8
1658	NPS G2 LSES	71	132	139	583	75				
1420	WPS G2 LSES	80	161	103	577	79				
1317	NK G2 LSES	87	167	151	513	84				
3094	WK G2 LSES	84	127	109	618	62				
6694	NPS G2 HSES	52	40	28	805	75				
3457	WPS G2 HSES	76	67	29	765	65				
3660	NK G2 HSES	75	60	39	728	98				
15262	WK G2 HSES	73	36	21	818	52				
1709	NPS G4 LSES	72	156	128	571	74				
749	WPS G4 LSES	84	156	100	594	65				
1419	NK G4 LSES	92	170	137	530	70				
2602	WK G4 LSES	107	125	113	593	61				
6704	NPS G4 HSES	54	34	34	807	70				
2139	WPS G4 HSES	84	53	34	777	53				
3872	NK G4 HSES	80	50	48	730	93				
13718	WK G4 HSES	73	32	28	818	50				
1903	NPS G6 LSES	68	152	140	560	80				
117	WPS G6 LSES	51	128	94	667	60				
1518	NK G6 LSES	79	165	136	523	96				
2043	WK G6 LSES	83	129	134	589	64				
7393	NPS G6 HSES	60	43	27	802	68				
987	WPS G6 HSES	73	33	27	823	44				
4527	NK G6 HSES	82	54	33	744	87				
11702	WK G6 HSES	65	31	27	828	49				

TABLE 2.39

Response Per Thousand For Subpopulations
Question 39 Byte 205

39.205 Remedial Program carried out cooperatively with teacher.

0 = ERROR
1 = Pupil received service
2 = Pupil needed service
3 = Pupil did not need service
4 = Activity not available

N	Subpopulations	Responses 0	1	2	3	4	5	6	7	8
1658	NPS G2 LSES	72	208	154	414	151				
1420	WPS G2 LSES	69	204	135	473	120				
1317	NK G2 LSES	90	195	159	379	176				
3094	WK G2 LSES	81	201	136	473	108				
6695	NPS G2 HSES	40	104	51	683	122				
3457	WPS G2 HSES	66	116	50	674	94				
3660	NK G2 HSES	65	110	68	599	158				
15262	WK G2 HSES	60	99	45	715	82				
1709	NPS G4 LSES	65	270	156	373	136				
749	WPS G4 LSES	71	220	140	449	120				
1419	NK G4 LSES	91	263	154	342	151				
2602	WK G4 LSES	81	239	167	410	103				
6704	NPS G4 HSES	48	108	61	675	109				
2139	WPS G4 HSES	71	109	50	663	106				
3872	NK G4 HSES	73	112	67	594	153				
13718	WK G4 HSES	61	105	54	706	74				
1903	NPS G6 LSES	59	237	196	360	148				
117	WPS G6 LSES	68	205	179	419	128				
1518	NK G6 LSES	65	239	188	339	169				
2043	WK G6 LSES	84	217	187	422	90				
7393	NPS G6 HSES	51	107	62	600	120				
987	WPS G6 HSES	64	87	53	714	80				
4527	NK G6 HSES	67	111	67	599	156				
11702	WK G6 HSES	57	96	56	716	76				

TABLE 2.40

Response Per Thousand For Subpopulations
Question 39 Byte 206

39.206 Referral to specialist or agency outside the school.

0 = ERROR
1 = Pupil received service
2 = Pupil needed service
3 = Pupil did not need service
4 = Activity not available

N	Subpopulations	Responses 0	1	2	3	4	5	6	7	8
1658	NPS G2 LSES	77	57	101	657	107				
1420	WPS G2 LSES	81	56	73	701	89				
1317	NK G2 LSES	106	53	111	610	119				
3094	WK G2 LSES	92	61	85	680	71				
6694	NPS G2 HSES	45	30	23	829	74				
3457	WPS G2 HSES	72	29	25	812	62				
3660	NK G2 HSES	70	31	27	763	109				
15262	WK G2 HSES	67	26	22	840	46				
1709	NPS G4 LSES	78	64	90	661	108				
749	WPS G4 LSES	91	67	63	697	83				
1419	NK G4 LSES	101	63	103	612	121				
2602	WK G4 LSES	101	64	94	673	68				
6704	NPS G4 HSES	51	24	30	822	73				
2139	WPS G4 HSES	70	28	25	815	61				
3872	NK G4 HSES	78	26	41	751	104				
13718	WK G4 HSES	67	26	25	834	48				
1903	NPS G6 LSES	65	56	114	624	123				
117	WPS G6 LSES	43	51	111	735	60				
1518	NK G6 LSES	74	56	111	613	146				
2043	WK G6 LSES	91	61	107	664	77				
7393	NPS G6 HSES	53	22	24	817	83				
987	WPS G6 HSES	72	19	29	825	55				
4527	NK G6 HSES	74	22	30	767	108				
11702	WK G6 HSES	61	22	27	839	51				

TABLE 2.41

Response Per Thousand For Subpopulations
Question 39 Byte 207

39.207 Other Activity.

0 = ERROR
1 = Pupil received service
2 = Pupil needed service
3 = Pupil did not need service
4 = Activity not available

N Subpopulations	Responses 0	1	2	3	4	5	6	7	8
1658 NPS G2 LSES	266	42	37	546	110				
1420 WPS G2 LSES	280	49	32	544	94				
1317 NK G2 LSES	298	50	46	480	126				
3094 WK G2 LSES	295	35	31	560	79				
6695 NPS G2 HSES	161	17	10	727	85				
3457 WPS G2 HSES	233	21	11	671	65				
3660 NK G2 HSES	200	21	17	649	112				
15262 WK G2 HSES	195	19	8	723	55				
1709 NPS G4 LSES	304	35	39	508	114				
749 WPS G4 LSES	282	33	31	557	97				
1419 NK G4 LSES	339	40	39	462	120				
2602 WK G4 LSES	302	31	46	538	83				
6704 NPS G4 HSES	175	17	14	715	78				
2139 WPS G4 HSES	206	20	13	698	63				
3872 NK G4 HSES	208	19	18	650	104				
13718 WK G4 HSES	196	16	11	722	54				
1903 NPS G6 LSES	284	50	50	492	123				
117 WPS G6 LSES	282	51	60	530	77				
1518 NK G6 LSES	294	57	53	466	130				
2043 WK G6 LSES	316	40	52	509	83				
7393 NPS G6 HSES	184	71	11	696	91				
987 WPS G6 HSES	212	16	11	710	51				
4527 NK G6 HSES	224	17	14	632	112				
11702 WK G6 HSES	198	20	12	713	56				

TABLE 2.42

Response Per Thousand For Subpopulations
Question 42 Byte 235

42.235 If this pupil is given a difficult task to complete on his own, he usually:

0 = ERROR
1 = Gives up without trying
2 = Starts the problem, but gives up rapidly
3 = Persists for some time, but does not complete the task
4 = Completes the task that was assigned

N	Subpopulations	Responses 0	1	2	3	4	5	6	7	8
1658	NPS G2 LSES	9	166	217	286	371				
1420	WPS G2 LSES	15	98	206	265	415				
1317	NK G2 LSES	12	126	211	295	355				
3094	WK G2 LSES	18	103	220	264	395				
6695	NPS G2 HSES	11	38	128	204	620				
3457	WPS G2 HSES	19	37	126	196	622				
3660	NK G2 HSES	16	42	133	205	604				
15262	WK G2 HSES	16	35	123	198	627				
1709	NPS G4 LSES	8	135	254	264	339				
749	WPS G4 LSES	5	93	230	252	419				
1419	NK G4 LSES	16	124	248	270	342				
2602	WK G4 LSES	13	119	233	266	369				
6704	NPS G4 HSES	13	47	140	204	595				
2139	WPS G4 HSES	16	38	109	203	633				
3872	NK G4 HSES	18	57	143	207	575				
13718	WK G4 HSES	17	42	129	201	610				
1903	NPS G6 LSES	18	121	260	269	333				
117	WPS G6 LSES	34	85	171	333	376				
1518	NK G6 LSES	18	117	258	277	331				
2043	WK G6 LSES	19	106	228	269	378				
7393	NPS G6 HSES	13	45	128	204	609				
987	WPS G6 HSES	19	39	102	167	673				
4527	NK G6 HSES	18	54	142	210	576				
11702	WK G6 HSES	17	38	125	189	632				

The response data for each possible response for the given subpopulations is arranged in the form of the matrix with the responses reported in numbers per thousand. This makes possible the easy comparison of the various subpopulations. The exact number in a given subpopulation responding in a particular way may be obtained by multiplying the total number of responses for that subpopulation by the number responding in a category and then dividing by a thousand.

In the following chapter, qualitative statements are made that compare the responses of the subpopulations to particular items. The reader may examine the basis on which these statements are made by referring to Tables 2.15 through 2.42.

Summary of Descriptive Data

Three types of descriptive data have been presented in this chapter. The first provided information concerning response rates for achievement test data. Tables 2.1 through 2.6 provided response profiles for the total sample, indicating the problem of missing data and multiple types of achievement test scores. Tables 2.7 and 2.8 provided information about the response rate for various states, indicating whether or not a child had attended preschool or kindergarten or whether no information was available. Table 2.9 provided a response profile by states with information concerning the percentage and number of children categorized by teachers as "socioeconomically disadvantaged." These children are referred to as the LSES group. All other children are presumed to be in a "higher" category, referred to as HSES.

The second major set of tables examined the mean age profile in months for children coming from states having school entrance age laws of 6 years, 7 years and 8 years. Table 2.10 summarized the overall data for combined states while Tables 2.11 through 2.14 provided information concerning individual states. This information was categorized according to children who (1) attended preschool, (2) did not attend preschool, (3) attended kindergarten, and (4) did not attend kindergarten. Each of the tables provided information for the second grade, fourth grade and sixth grade as well as the school attendance law for that state. An examination of this data revealed minimal differences in estimated school entrance age for students coming from states with varying school entrance laws. Even the minimal variation that existed did not correspond to the entrance age laws in the states, i.e., children coming from states with the lowest school entrance age requirements did not have mean estimated entrance ages that were lower.

The third set of tables, Tables 2.15 through 2.42, provided responses of the various subpopulations to ordinal and nominal data. In these tables responses are reported in numbers per thousand so that readers can examine the qualitative statements comparing responses to specific items for the selected subpopulations discussed in later chapters.

CHAPTER III: COMPARISONS OF PUPILS IDENTIFIED AS "SOCIOECONOMICALLY DISADVANTAGED" WITH OTHER PUPILS

The purpose of this chapter is to compare children identified by teachers as socioeconomically disadvantaged (LSES) with children not so identified (HSES). These comparisons have been made on two types of data: (1) interval measure achievement test data, and (2) nominal and ordinal response data to selected questions concerning the pupil's characteristics or the pupil's family characteristics. The nominal and ordinal data can be divided into three major categories--demographic data, teacher judgments about student characteristics, and teacher judgments and observations of services rendered or needed. Summaries of questions are given for demographic data (Table 1.1), professional judgments (Table 1.2) and professional observations (Table 1.3).

The findings from comparisons of socioeconomically disadvantaged and nondisadvantaged children are reported in two sections in this chapter. The first section compares the achievement test data for "socioeconomically disadvantaged pupils" with other pupils, and the second compares nominal and ordinal data for "socioeconomically disadvantaged pupils" with other pupils.

Comparisons of Achievement Test Data

All data for achievement test score comparisons is based upon normed tests. Conversions have been made so that the scores are represented as

standard scores having a mean of zero and a standard deviation of 1. Figures 3.1 to 3.6 provide graphic comparisons for achievement test data of socioeconomically disadvantaged pupils with other pupils. The first three figures have been organized to show differences between socioeconomically disadvantaged pupils and other pupils and between those having kindergarten and those not having kindergarten. Each figure shows a different grade--grade 2, 4 or 6. Comparisons are made for the areas of reading, math and language. The second set of three figures is similar except that it compares groups of students not having preschool with those having preschool. Again there are representations of socioeconomically disadvantaged students and other students.

The figures graphically illustrate how much more variation there is among the HSES groups and the LSES groups. An examination of Figures 3.1, 3.2 and 3.3 indicates that all of the mean test scores for children with kindergarten are above zero except for fourth-grade reading, which is -.0066. These means are what would be expected for an average population of second, fourth and sixth graders taking a nationally normed test with a mean of zero.

Except for second-grade mathematics, all of the means for LSES pupils are more than .7 standard deviations below zero. For the sixth grade they are more than .8 standard deviations below zero. Comparing the LSES to that of the population as a whole indicates that only 25% of the general population would be expected to fall below the mean of those identified as socioeconomically disadvantaged. On the other hand, approximately 50% of the population would be above and 50% below the mean of those not identified as socioeconomically disadvantaged (HSES) and having kindergarten. Thus, the HSES groups have a mean approximately equal to the expected mean

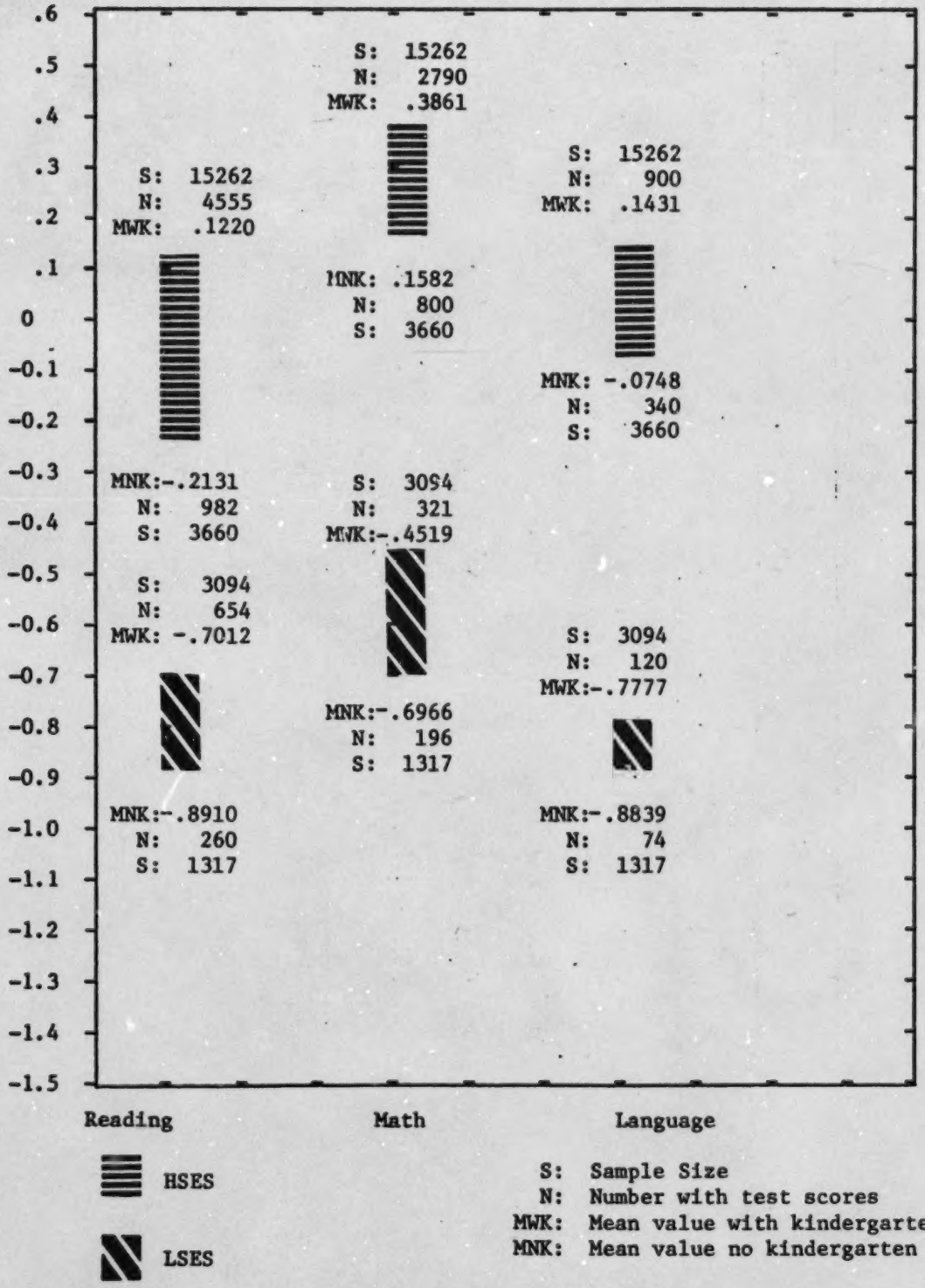

FIGURE 3.1

Grade 2: Analysis of Achievement Test Scores
No Kindergarten Versus Kindergarten

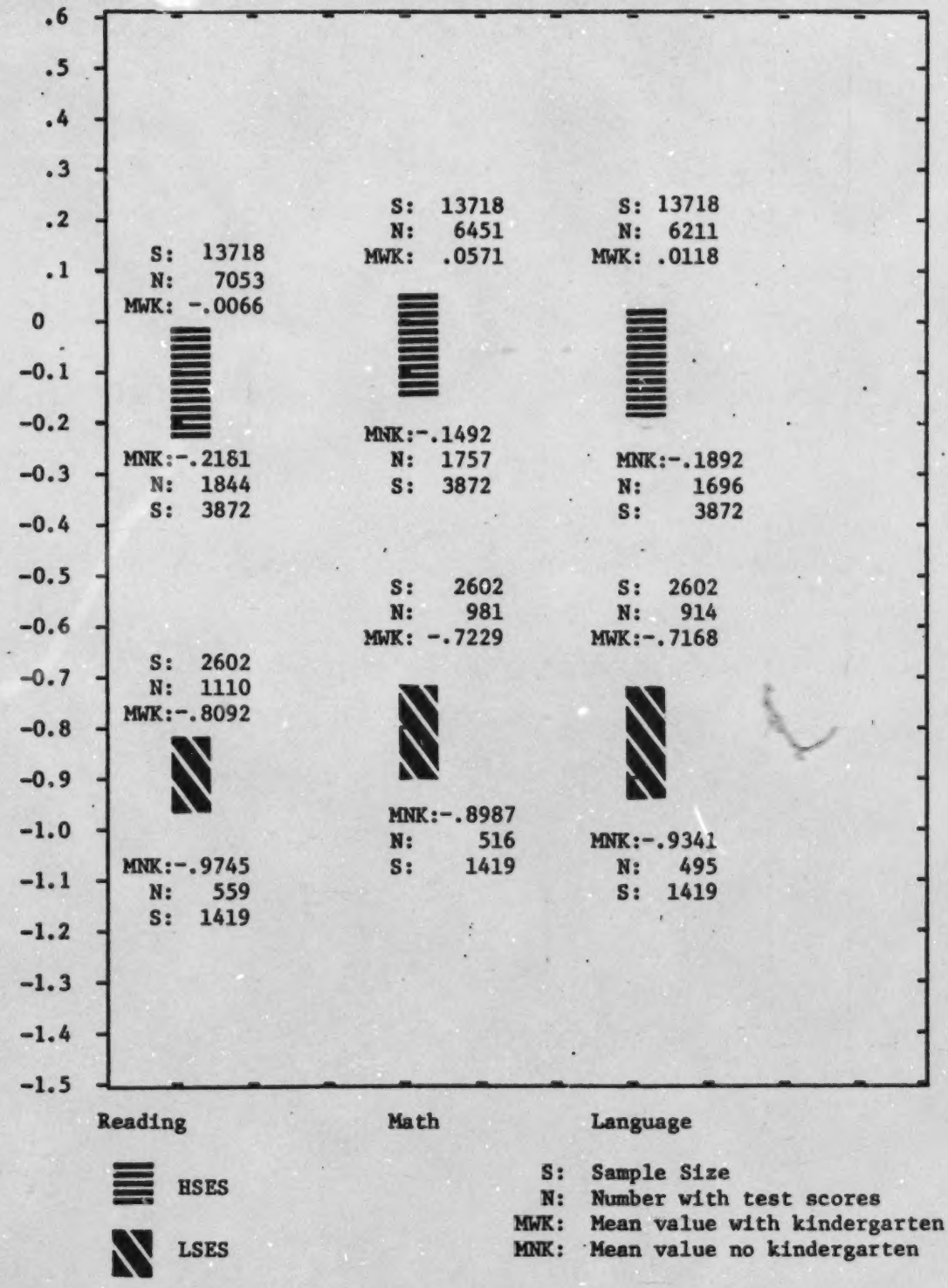

FIGURE 3.2

Grade 4: Analysis of Achievement Test Scores
No Kindergarten versus Kindergarten

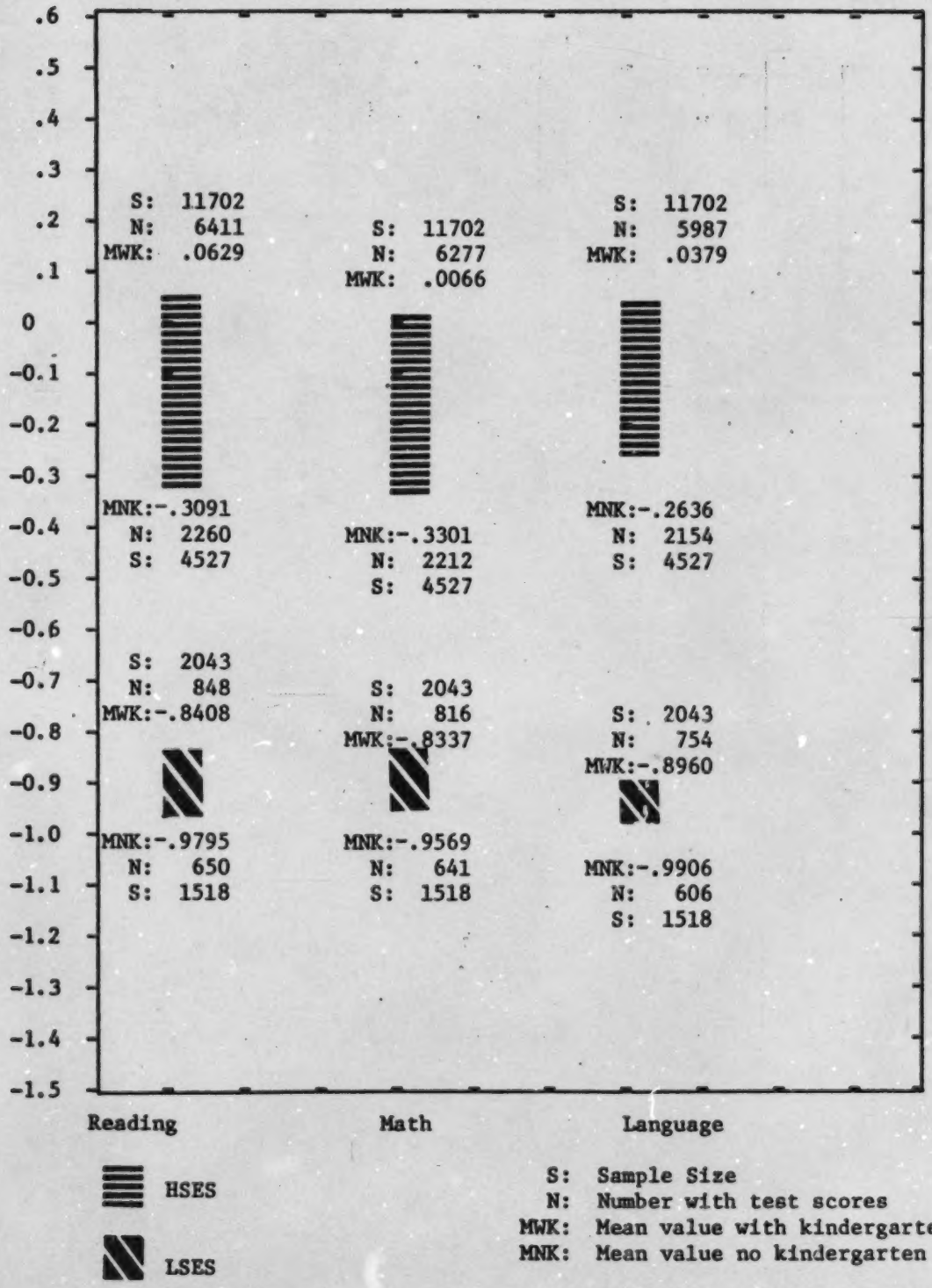

FIGURE 3.3

Grade 6: Analysis of Achievement Test Scores
No Kindergarten Versus Kindergarten

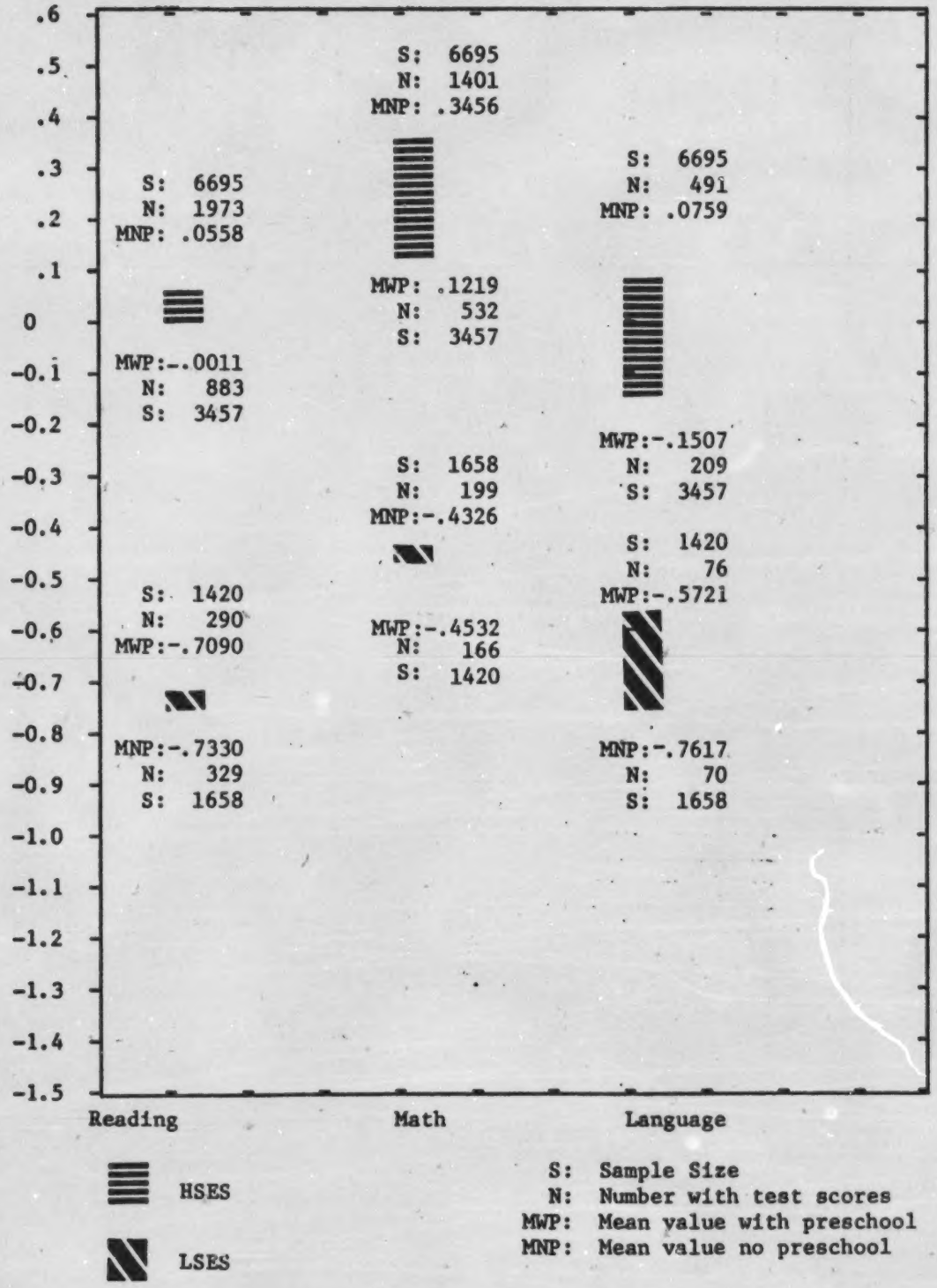

FIGURE 3.4

Grade 2: Analysis of Achievement Test Scores
No Preschool Versus Preschool

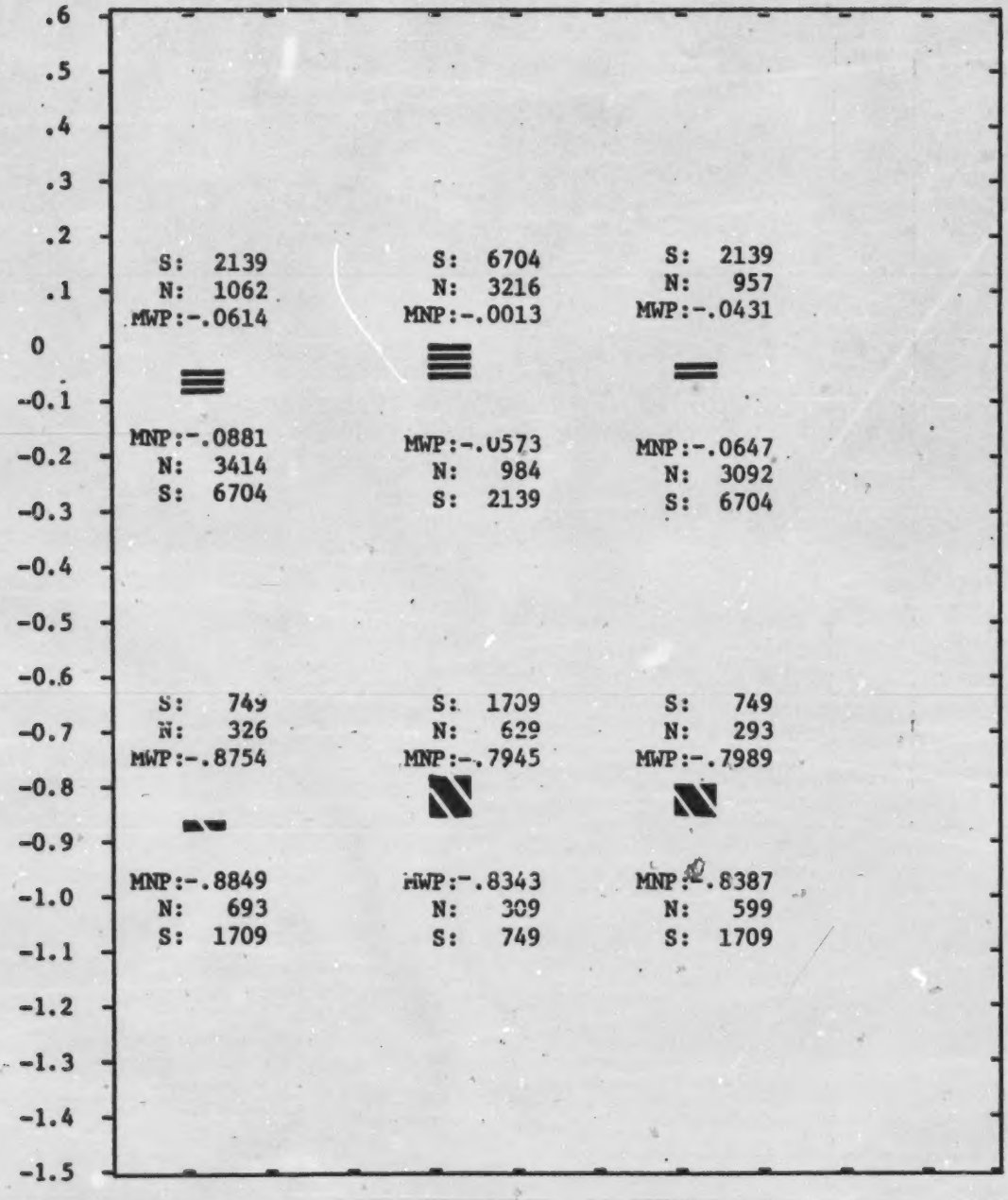

FIGURE 3.5

Grade 4: Analysis of Achievement Test Scores
No Preschool Versus Preschool

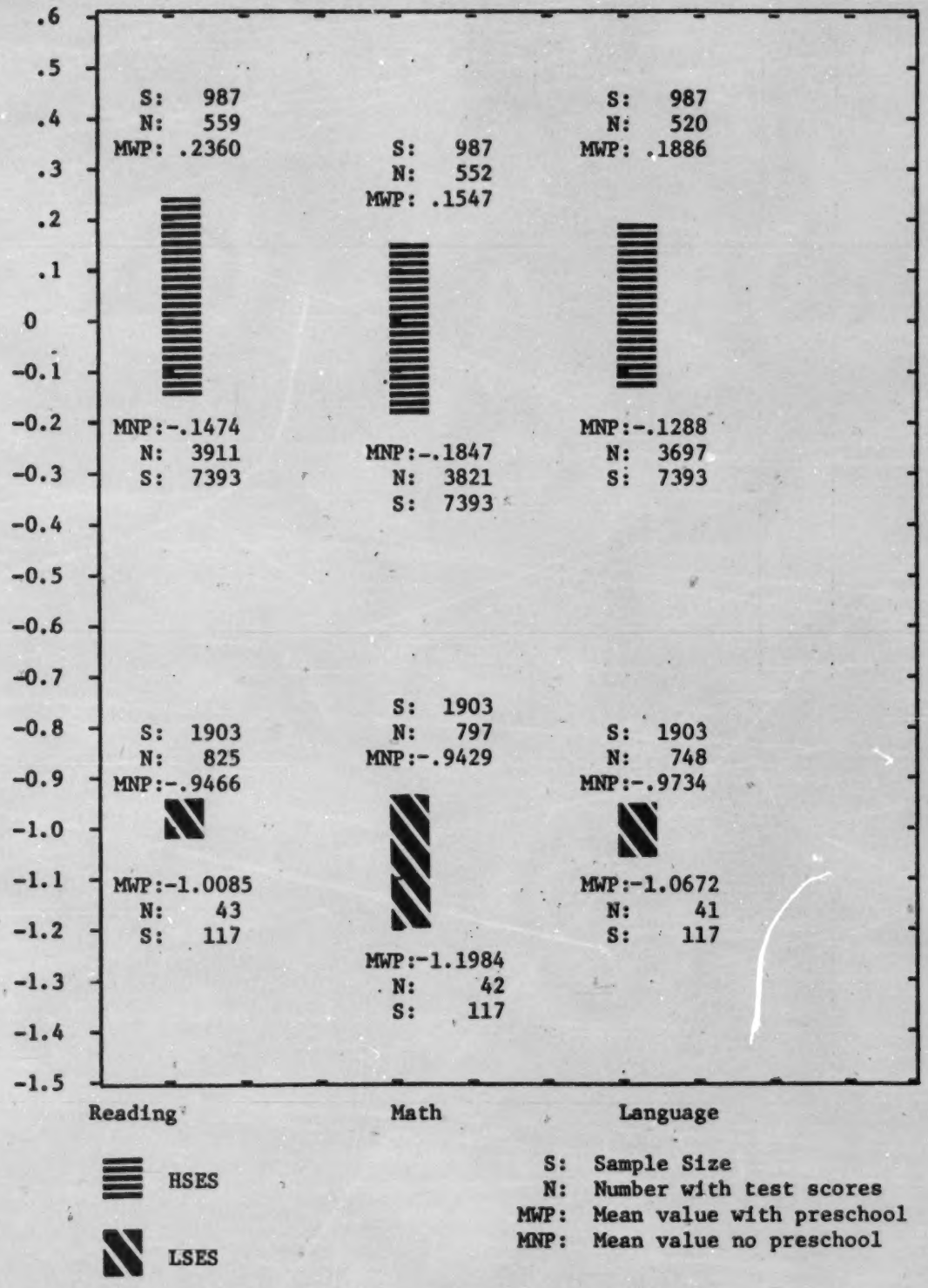

FIGURE 3.6

Grade 6: Analysis of Achievement Test Scores
No Preschool Versus Preschool

for the population on which the test was normed, whereas the LSES groups have a mean score much below the normed mean. This suggests that perhaps the tests were originally normed in schools where there was a minimal number of socioeconomically disadvantaged children.

The variation between subpopulations having kindergarten and not having kindergarten, or having preschool and not having preschool, will be discussed in a later chapter. However, it is significant to note at this point how much greater the variation is between HSES and LSES groups than between groups categorized as having or not having kindergarten, or having or not having preschool.

Comparisons of High and Low SES on Selected Nominal and Ordinal Data Items

This section compares the responses within various selected subpopulations of pupils identified as socioeconomically disadvantaged (LSES) with pupils not identified as socioeconomically disadvantaged (HSES). In the various tables, the socioeconomically disadvantaged children are indicated by LSES, and those not marked by a teacher as socioeconomically disadvantaged are indicated by HSES. The responses to selected questions have been examined by grade (grades 2, 4 or 6) for subpopulations (1) having preschool, (2) not having preschool, (3) having kindergarten, and (4) not having kindergarten.

The items which were examined were analyzed in two distinct ways: first, in terms of a profile analysis and second, an item-by-item comparison using chi-square to test for statistically significant differences. In considering the chi-square comparison, it is important to note the caution found at the end of Chapter 1. The Cattell coefficient of pattern

similarity was used to examine the overall profiles. Three selected profiles were examined as well as two combinations of the selected profiles.

Specific items for the first profile, involving demographic data, are found in Tables 1.1 and 1.2. Items 13.37, 13.69, 19.75, 20.76, 20.77, 22.80, 26.89, and 26.90 are identified in these tables. Information from these items included the number of schools attended, the pupil's race, the relationship of the head of the pupil's household to the pupil, whether the pupil's family was receiving welfare, the employment status of the head of household, the employment status of the mother, the teacher's estimate of the educational level of the head of household, and the teacher's estimate of the educational level of the pupil's mother.

The second profile included items that were based upon teacher judgments. These are listed in Table 1.2 and include items 9.40, 10.41, 11.52 through 11.56, 12.63 and 12.66, all of which examine teacher judgments. Judgments were made concerning (1) a pupil's present attitude and how much education the pupil was likely to complete, (2) present ability and how much education the pupil was likely to complete, (3) the existence of persistent problems concerning social immaturity, (4) emotional problems, (5) antisocial behavior, (6) malnutrition, (7) family instability, (8) whether or not the pupil was a potential dropout, or (9) a delinquent or neglected pupil.

The third set of items examined in terms of the student's profile pertained to records of special services used and teacher evaluations of whether such services were needed but not received. One other item included in this section of teacher observations was the student's approach to a difficult task. This set of professional observations, and in some instances judgments, includes items 39.199 through 39.207 and item 42.235.

The information concerns (1) diagnostic assessment of academic, social or emotional programs, (2) case conferences with teacher or other school personnel, (3) individual counseling, (4) group counseling, (5) psychological treatment, (6) home visitation, (7) remedial programs, (8) reference to special agency outside of the school, (9) other pupil personnel services, and (10) how the pupil approached the completion of a difficult task. A combination of the profiles involving items in sets 2 and 3 and a final profile combining all items in sets 1, 2 and 3 were also included in the profile analyses.

Cattell's coefficient of pattern similarity ranges in value from +1 to -1. It is similar in interpretation to a correlation coefficient where +1 indicates identical patterns for groups compared. Zero indicates no similarity or dissimilarity and -1 indicates the maximum dissimilarity possible. Summary Tables 3.1 through 3.6 list values in column P for the significant levels associated with the coefficients, i.e., the probabilities that the coefficient of the given magnitude for the given sample sizes would occur by chance sampling. Values of P greater than .5 have not been reported.

An examination of these tables reveals that all profiles comparing HSES and LSES groups, except the profile of teacher observation, have a coefficient indicating dissimilarity with a significant level of .01 or less. All teacher observations for HSES and LSES with various combinations of subgroups having or not having kindergarten also show a dissimilarity with a significant level less than or equal to .01 except grade 6 HSES without kindergarten, as compared to grade 6 LSES without kindergarten. In this instance the probability is .05. It should be noted that the samples involving children having or not having kindergarten represent the largest

TABLE 3.1*

Cattell's Pattern Similarity Index (RP)
for
Grade 2 Preschool-No Preschool High SES-Low SES

Group 1	3457	Grade 2	HSES	With	Preschool
Group 2	6695	Grade 2	HSES	No	Preschool
Group 3	1420	Grade 2	LSES	With	Preschool
Group 4	1658	Grade 2	LSES	No	Preschool

Indexes of Pattern Similarity

	Groups	Coefficients	P
Demographic	1, 2	-.016	
Item Set 1	1, 3	-.706	.01
	1, 4	-.690	.01
	2, 3	-.814	.01
	2, 4	-.783	.01
	3, 4	.321	
Teacher Judgments	1, 2	.966	.01
Item Set 2	1, 3	-.668	.01
	1, 4	-.794	.01
	2, 3	-.646	.01
	2, 4	-.784	.01
	3, 4	.233	
Teacher Observations	1, 2	.585	.01
Item Set 3	1, 3	.026	
	1, 4	.046	
	2, 3	-.315	.05
	2, 4	-.265	
	3, 4	.900	.01
Item Sets 2 and 3	1, 2	.752	.01
	1, 3	-.469	.01
	1, 4	-.631	.01
	2, 3	-.511	.01
	2, 4	-.644	.01
	3, 4	.527	.01
Item Sets 1, 2 and 3	1, 2	.443	.01
	1, 3	-.559	.01
	1, 4	-.642	.01
	2, 3	-.659	.01
	2, 4	-.693	.01
	3, 4	.472	.01

*(Steinhilber, 1966)

TABLE 3.2

Cattell's Pattern Similarity Index (RP)
for
Grade 4 Preschool-No Preschool High SES-Low SES

Group 1	2139	Grade 4	HSES	With	Preschool
Group 2	6704	Grade 4	HSES	No	Preschool
Group 3	749	Grade 4	LSES	With	Preschool
Group 4	1709	Grade 4	LSES	No	Preschool

Indexes of Pattern Similarity

	Groups	Coefficients	P
Demographic	1, 2	.178	
Item Set 1	1, 3	-.708	.01
	1, 4	-.701	.01
	2, 3	-.769	.01
	2, 4	-.734	.01
	3, 4	.326	
Teacher Judgments	1, 2	.742	.01
Item Set 2	1, 3	-.580	.01
	1, 4	-.783	.01
	2, 3	-.457	.01
	2, 4	-.736	.01
	3, 4	.052	
Teacher Observations	1, 2	.705	.01
Item Set 3	1, 3	.056	
	1, 4	-.143	
	2, 3	-.205	
	2, 4	-.311	.05
	3, 4	.830	.01
Item Sets 2 and 3	1, 2	.731	.01
	1, 3	-.369	.01
	1, 4	-.631	.01
	2, 3	-.332	.01
	2, 4	-.597	.01
	3, 4	.373	.02
Item Sets 1, 2 and 3	1, 2	.535	.01
	1, 3	-.517	.01
	1, 4	-.647	.01
	2, 3	-.558	.01
	2, 4	-.641	.01
	3, 4	.370	.01

TABLE 3.3

Cattell's Pattern Similarity Index (RP)
for
Grade 6 Preschool-No Preschool High SES-Low SES

Group 1	987	Grade 6	HSES	With	Preschool
Group 2	7393	Grade 6	HSES	No	Preschool
Group 3	117	Grade 6	LSES	With	Preschool
Group 4	1903	Grade 6	LSES	No	Preschool

Indexes of Pattern Similarity

	Groups	Coefficients	P
Demographic	1, 2	-.040	
Item Set 1	1, 3	-.815	.01
	1, 4	-.823	.01
	2, 3	-.729	.01
	2, 4	-.716	.01
	3, 4	.282	
Teacher Judgments	1, 2	.333	
Item Set 2	1, 3	-.650	.01
	1, 4	-.777	.01
	2, 3	-.468	.01
	2, 4	-.672	.01
	3, 4	.225	
Teacher Observations	1, 2	.817	.01
Item Set 3	1, 3	.128	
	1, 4	-.141	
	2, 3	.039	
	2, 4	-.228	
	3, 4	.687	.01
Item Sets 2 and 3	1, 2	.564	.01
	1, 3	-.434	.01
	1, 4	-.623	.01
	2, 3	-.267	.05
	2, 4	-.516	.01
	3, 4	.447	.01
Item Sets 1, 2 and 3	1, 2	.337	.02
	1, 3	-.636	.01
	1, 4	-.709	.01
	2, 3	-.498	.01
	2, 4	-.589	.01
	3, 4	.406	.01

TABLE 3.4

Cattell's Pattern Similarity Index (RP)
for
Grade 2 Kindergarten-No Kindergarten High SES-Low SES

Group 1	15396	Grade 2	HSES	With	Kindergarten
Group 2	3660	Grade 2	HSES	No	Kindergarten
Group 3	3113	Grade 2	LSES	With	Kindergarten
Group 4	1317	Grade 2	LSES	No	Kindergarten

Indexes of Pattern Similarity

	Groups	Coefficients	P
Demographic	1, 2	-.112	
Item Set 1	1, 3	-.886	.01
	1, 4	-.883	.01
	2, 3	-.829	.01
	2, 4	-.811	.01
	3, 4	.409	
Teacher Judgments	1, 2	-.059	
Item Set 2	1, 3	-.847	.01
	1, 4	-.917	.01
	2, 3	-.756	.01
	2, 4	-.878	.01
	3, 4	-.446	.01
Teacher Observations	1, 2	.815	.01
Item Set 3	1, 3	-.437	.01
	1, 4	-.480	.01
	2, 3	-.504	.01
	2, 4	-.521	.01
	3, 4	.792	.01
Item Sets 2 and 3	1, 2	.279	
	1, 3	-.744	.01
	1, 4	-.845	.01
	2, 3	-.656	.01
	2, 4	-.792	.01
	3, 4	-.110	
Item Sets 1, 2 and 3	1, 2	.149	
	1, 3	-.807	.01
	1, 4	-.855	.01
	2, 3	-.727	.01
	2, 4	-.793	.01
	3, 4	.007	

TABLE 3.5

Cattell's Pattern Similarity Index (RP)
for
Grade 4 Kindergarten-No Kindergarten High SES-Low SES

Group 1	13874	Grade 4	HSES	With	Kindergarten
Group 2	3872	Grade 4	HSES	No	Kindergarten
Group 3	2625	Grade 4	LSES	With	Kindergarten
Group 4	1419	Grade 4	LSES	No	Kindergarten

Indexes of Pattern Similarity

	Groups	Coefficients	P
Demographic	1, 2	-.087	
Item Set 1	1, 3	-.872	.01
	1, 4	-.868	.01
	2, 3	-.822	.01
	2, 4	-.797	.01
	3, 4	.285	
Teacher Judgments	1, 2	.027	
Item Set 2	1, 3	-.826	.01
	1, 4	-.897	.01
	2, 3	-.734	.01
	2, 4	-.848	.01
	3, 4	-.345	.05
Teacher Observations	1, 2	.893	.01
Item Set 3	1, 3	-.521	.01
	1, 4	-.546	.01
	2, 3	-.509	.01
	2, 4	-.529	.01
	3, 4	.877	.01
Item Sets 2 and 3	1, 2	.370	.02
	1, 3	-.729	.01
	1, 4	-.820	.01
	2, 3	-.639	.01
	2, 4	-.755	.01
	3, 4	.016	.10
Item Sets 1, 2 and 3	1, 2	.211	
	1, 3	-.790	.01
	1, 4	-.833	.01
	2, 3	-.714	.01
	2, 4	-.764	.01
	3, 4	.093	

TABLE 3.6

Cattell's Pattern Similarity Index (RP)
for
Grade 6 Kindergarten-No Kindergarten High SES-Low SES

Group 1	11863	Grade 6	HSES	With	Kindergarten
Group 2	4527	Grade 6	HSES	No	Kindergarten
Group 3	2058	Grade 6	LSES	With	Kindergarten
Group 4	1518	Grade 6	LSES	No	Kindergarten

Indexes of Pattern Similarity

	Groups	Coefficients	P
Demographic	1, 2	-.037	
Item Set 1	1, 3	-.864	.01
	1, 4	-.859	.01
	2, 3	-.797	.01
	2, 4	-.769	.01
	3, 4	.296	
Teacher Judgments	1, 2	.201	
Item Set 2	1, 3	-.805	.01
	1, 4	-.858	.01
	2, 3	-.721	.01
	2, 4	-.794	.01
	3, 4	.100	
Teacher Observations	1, 2	.826	.01
Item Set 3	1, 3	-.507	.01
	1, 4	-.427	.01
	2, 3	-.491	.01
	2, 4	-.367	.05
	3, 4	.590	.01
Item Sets 2 and 3	1, 2	.480	.01
	1, 3	-.704	.01
	1, 4	-.757	.01
	2, 3	-.622	.01
	2, 4	-.670	.01
	3, 4	.330	.05
Item Sets 1, 2 and 3	1, 2	.295	.05
	1, 3	-.774	.01
	1, 4	-.794	.01
	2, 3	-.690	.01
	2, 4	-.699	.01
	3, 4	.331	.02

group of children. The only instance where comparisons of HSES and LSES children do not have a significant dissimilarity index involves teacher observations for pupils known to have or not have preschool.

Qualitatively, it can be stated that there is a high degree of dissimilarity for all profiles comparing high and low SES groups except selected profiles involving teacher observations of pupils whose preschool history was known.

Comparison of selected items.

Tables 2.15 through 2.42 contain all items which were included in the Cattell profile analysis. These tables show response rates to specific alternatives on the basis of responses per thousand.

A chi-square test was used on the raw data of selected subgroups to determine whether their responses to specific items were significantly different. The comparisons of interest to this chapter involved selected subpopulations of pupils identified by teachers as socioeconomically disadvantaged (LSES) or not disadvantaged (HSES). The specific subpopulations examined for each grade were populations known to have preschool, known not to have preschool, known to have kindergarten and known not to have kindergarten. In all, twelve specific comparisons were made involving low socioeconomic and higher socioeconomic pupils. There were four SES comparisons for each grade: with kindergarten, low versus high; no kindergarten, low versus high; with preschool, low versus high; and no preschool, low versus high.

The comparisons were made in such a way that when cells (a category of response) had less than four observations they were collapsed with similar cells in a logical manner for both groups that were being compared.

The values of chi-square were such that the significant level of LSES and HSES comparisons involving pupils known to have kindergarten or known not to have kindergarten was .005 or less.

All comparisons for grades 2 and 4, involving children known to have preschool or known not to have preschool, also had significant levels of less than .005 with the exception of fourth graders known to have preschool on items that compared the number of schools attended. In this instance the significant level was .01. On comparisons of LSES and HSES for grade 6 students known to have preschool there were significant differences at the .005 level for most items. Exceptions to this were: the number of schools attended (no significant differences), social immaturity (significant at the .01 level), antisocial behavior (no significant difference), the mother's employment status (significant at the .01 level), and information concerning psychological treatment services administered (significant at the .01 level). All comparisons for sixth grade children known not to have preschool were significant at the .005 level. It is important to note that in the one instance where there were several cases that were not significant at the .005 level (sixth-grade LSES students with preschool compared with HSES students with preschool) that the number of students from grade 6 identified as LSES with preschool was only 117.

The question is not whether there are differences between LSES and HSES groups, but qualitatively, what were the differences? (Tables 3.7 to 3.18 show the chi-square values.) For the reader wishing to examine the quantitative or qualitative differences, Tables 2.15 through 2.42 provide responses per thousand grouped so that LSES responses and HSES responses can be readily compared for various subpopulations. The remainder of this chapter will provide a qualitative statement of what differences existed in an item-by-item analysis.

Number of schools attended. As a whole, LSES pupils attended significantly more schools than HSES pupils. This was true regardless of grade and subpopulation with the exception of grade 6 pupils who had preschool.

Teacher expectations of educational attainment compared with present estimates of pupil attitude. As a whole, teachers expected LSES pupils to complete fewer grades of education than children not identified as socioeconomically disadvantaged. This was true regardless of the subpopulations which were examined.

Teacher expectations of educational attainment compared with present estimates of pupil ability. Based upon teacher estimates of present ability, LSES pupils were expected to complete fewer grades of education than HSES pupils. This was true regardless of the subpopulations considered.

Teacher judgments of social immaturity. Teachers judged that a significantly greater number of LSES pupils had persistent problems of social immaturity than HSES pupils.

Teacher judgments concerning emotional problems. Teachers judged that a significantly greater number of LSES pupils had emotional problems than HSES pupils.

Teacher judgments of antisocial behavior. As a whole, teachers' judgments indicated that a significantly greater number of LSES pupils exhibited antisocial behavior than HSES pupils. The one subgroup where this was not significantly different was that of sixth-grade children with preschool. As previously noted, this involved a very small sample of 117 LSES pupils with preschool.

TABLE 3.7

Grade 2 With Preschool
3457 High SES Versus 1420 Low SES

Item	Description	Chi-Sq.	Deg. Fr.	Sign.-Level
7.37	No. of Schools	26.47	4	$p < .005$
9.40	Attitude vs. Educ. Expect.	643.57	5	$p < .005$
10.41	Ability vs. Educ. Expect.	477.66	5	$p < .005$
11.52	Social Immaturity	131.63	1	$p < .005$
11.53	Emotional Problems	81.74	1	$p < .005$
11.54	Anti-social Behavior	75.16	1	$p < .005$
11.55	Malnutrition	73.73	1	$p < .005$
11.56	Family Instability	432.73	1	$p < .005$
12.63	Potential Dropout	451.76	1	$p < .005$
12.66	Neglected or Delinq. Pupils	65.92	1	$p < .005$
13.69	Race	511.85	5	$p < .005$
19.75	Head of Household	297.64	7	$p < .005$
20.76	Welfare	940.02	3	$p < .005$
20.77	Employment Status	573.08	4	$p < .005$
22.80	Mother Employment	107.15	6	$p < .005$
26.89	Educ. Level Head	887.53	6	$p < .005$
26.90	Educ. Level Mother	816.13	6	$p < .005$
39.199	Diagnostic Assessment	114.50	4	$p < .005$
39.200	Case Conference	212.77	4	$p < .005$
39.201	Indiv. Counseling	151.64	4	$p < .005$
39.202	Group Counseling	79.76	4	$p < .005$
39.203	Psychol. Treatment	39.96	4	$p < .005$
39.204	Home Visitation	259.52	4	$p < .005$
39.205	Remedial Program	223.99	4	$p < .005$
39.206	Ref. to Specialist	105.28	4	$p < .005$
39.207	Other	101.33	4	$p < .005$
42.235	Diff. Task Completion	208.70	4	$p < .005$

TABLE 3.8

Grade 2 No Preschool
6695 High SES Versus 1658 Low SES

Item	Description	Chi-Sq.	Deg. Fr.	Sign.-Level
7.37	No. of Schools	186.14	4	$p < .005$
9.40	Attitude vs. Educ. Expect.	1391.51	5	$p < .005$
10.41	Ability vs. Educ. Expect.	1025.23	4	$p < .005$
11.52	Social Immaturity	178.64	1	$p < .005$
11.53	Emotional Problems	229.46	1	$p < .005$
11.54	Anti-social Behavior	175.20	1	$p < .005$
11.55	Malnutrition	254.16	1	$p < .005$
11.56	Family Instability	58.83	1	$p < .005$
12.63	Potential Dropout	701.87	1	$p < .005$
12.66	Neglected or Delinq. Pupils	418.40	1	$p < .005$
13.69	Race	1421.63	4	$p < .005$
19.75	Head of Household	757.85	7	$p < .005$
20.76	Welfare	2401.85	3	$p < .005$
20.77	Employment Status	1507.17	4	$p < .005$
22.80	Mother Employment	258.28	6	$p < .005$
26.89	Educ. Level Head	1734.23	7	$p < .005$
26.90	Educ. Level Mother	1604.29	7	$p < .005$
39.199	Diagnostic Assessment	251.06	4	$p < .005$
39.200	Case Conference	409.26	4	$p < .005$
39.201	Indiv. Counseling	356.91	4	$p < .005$
39.202	Group Counseling	227.23	4	$p < .005$
39.203	Psychol. Treatment	178.23	4	$p < .005$
39.204	Home Visitation	612.97	4	$p < .005$
39.205	Remedial Program	503.45	4	$p < .005$
39.206	Ref. to Specialist	337.13	4	$p < .005$
39.207	Other	252.73	4	$p < .005$
42.235	Diff. Task Completion	413.09	4	$p < .005$

TABLE 3.9

Grade 4 With Preschool
2139 High SES Versus 749 Low SES

Item	Description	Chi-Sq.	Deg. Fr.	Sign.-Level
7.37	No. of Schools	7.01	3	$p < .01$
9.40	Attitude vs. Educ. Expect.	377.99	4	$p < .005$
10.41	Ability vs. Educ. Expect.	270.90	4	$p < .005$
11.52	Social Immaturity	133.97	1	$p < .005$
11.53	Emotional Problems	34.06	1	$p < .005$
11.54	Anti-social Behavior	26.50	1	$p < .005$
11.55	Malnutrition	43.12	1	$p < .005$
11.56	Family Instability	177.05	1	$p < .005$
12.63	Potential Dropout	172.89	1	$p < .005$
12.66	Neglected or Delinq. Pupils	59.75	1	$p < .005$
13.69	Race	360.54	4	$p < .005$
19.75	Head of Household	467.33	6	$p < .005$
20.76	Welfare	506.15	3	$p < .005$
20.77	Employment Status	311.60	4	$p < .005$
22.80	Mother Employment	57.80	6	$p < .005$
26.89	Educ. Level Head	525.71	6	$p < .005$
26.90	Educ. Level Mother	514.12	7	$p < .005$
39.199	Diagnostic Assessment	81.73	4	$p < .005$
39.200	Case Conference	122.59	4	$p < .005$
39.201	Indiv. Counseling	78.20	4	$p < .005$
39.202	Group Counseling	46.27	4	$p < .005$
39.203	Psychol. Treatment	33.51	4	$p < .005$
39.204	Home Visitation	148.49	4	$p < .005$
39.205	Remedial Program	153.08	4	$p < .005$
39.206	Ref. to Specialist	61.03	4	$p < .005$
39.207	Other	53.64	4	$p < .005$
42.235	Diff. Task Completion	145.00	4	$p < .005$

TABLE 3.10

Grade 4 No Preschool
6704 High SES Versus 1709 Low SES

Item	Description	Chi-Sq.	Deg. Fr.	Sign.-Level
7.37	No. of Schools	113.99	5	$p < .005$
9.40	Attitude vs. Educ. Expect.	1274.69	4	$p < .005$
10.41	Ability vs. Educ. Expect.	990.39	4	$p < .005$
11.52	Social Immaturity	167.98	1	$p < .005$
11.53	Emotional Problems	253.71	1	$p < .005$
11.54	Anti-social Behavior	176.71	1	$p < .005$
11.55	Malnutrition	193.16	1	$p < .005$
11.56	Family Instability	788.50	1	$p < .005$
12.63	Potential Dropout	735.50	1	$p < .005$
12.66	Neglected or Delinq. Pupils	327.97	1	$p < .005$
13.69	Race	1503.53	5	$p < .005$
19.75	Head of Household	766.02	8	$p < .005$
20.76	Welfare	2135.34	3	$p < .005$
20.77	Employment Status	1360.70	4	$p < .005$
22.80	Mother Employment	97.70	6	$p < .005$
26.89	Educ. Level Head	1603.30	7	$p < .005$
26.90	Educ. Level Mother	1429.87	6	$p < .005$
39.199	Diagnostic Assessment	452.01	4	$p < .005$
39.200	Case Conference	475.70	4	$p < .005$
39.201	Indiv. Counseling	349.10	4	$p < .005$
39.202	Group Counseling	260.95	4	$p < .005$
39.203	Psychol. Treatment	174.15	4	$p < .005$
39.204	Home Visitation	675.86	4	$p < .005$
39.205	Remedial Program	630.33	4	$p < .005$
39.206	Ref. to Specialist	266.85	4	$p < .005$
39.207	Other	279.77	4	$p < .005$
42.235	Diff. Task Completion	460.71	4	$p < .005$

TABLE 3.11

Grade 6 With Preschool
987 High SES Versus 117 Low SES

Item	Description	Chi-Sq.	Deg. Fr.	Sign.-Level
7.37	No. of Schools	4.56	3	
9.40	Attitude vs. Educ. Expect.	112.65	4	p< .005
10.41	Ability vs. Educ. Expect.	108.37	4	p< .005
11.52	Social Immaturity	7.04	1	p< .01
11.53	Emotional Problems	22.48	1	p< .005
11.54	Anti-social Behavior	3.51	1	
11.55	Malnutrition	13.20	1	p< .005
11.56	Family Instability	61.06	1	p< .005
12.63	Potential Dropout	48.80	1	p< .005
12.66	Neglected or Delinq. Pupils	13.87	1	p< .005
13.69	Race	160.64	2	p< .005
19.75	Head of Household	100.95	3	p< .005
20.76	Welfare	198.68	3	p< .005
20.77	Employment Status	105.10	3	p< .005
22.80	Mother Employment	15.29	5	p< .01
26.89	Educ. Level Head	168.42	5	p< .005
26.90	Educ. Level Mother	172.36	6	p< .005
39.199	Diagnostic Assessment	64.31	4	p< .005
39.200	Case Conference	25.21	4	p< .005
39.201	Indiv. Counseling	24.69	4	p< .005
39.202	Group Counseling	27.92	4	p< .005
39.203	Psychol. Treatment	12.58	3	p< .01
39.204	Home Visitation	39.58	4	p< .005
39.205	Remedial Program	56.46	4	p< .005
39.206	Ref. to Specialist	25.48	4	p< .005
39.207	Other	30.29	4	p< .005
42.235	Diff. Task Completion	40.90	4	p< .005

TABLE 3.12

Grade 6 No Preschool
7393 High SES Versus 1903 Low SES

Item	Description	Chi-Sq.	Deg. Fr.	Sign.-Level
7.37	No. of Schools	63.11	6	$p < .005$
9.40	Attitude vs. Educ. Expect.	884.34	4	$p < .005$
10.41	Ability vs. Educ. Expect.	899.99	4	$p < .005$
11.52	Social Immaturity	147.08	1	$p < .005$
11.53	Emotional Problems	261.99	1	$p < .005$
11.54	Anti-social Behavior	184.28	1	$p < .005$
11.55	Malnutrition	84.69	1	$p < .005$
11.56	Family Instability	833.32	1	$p < .005$
12.63	Potential Dropout	700.13	1	$p < .005$
12.66	Neglected or Delinq. Pupils	285.30	1	$p < .005$
13.69	Race	1576.90	5	$p < .005$
19.75	Head of Household	750.97	8	$p < .005$
20.76	Welfare	1955.12	3	$p < .005$
20.77	Employment Status	1465.40	4	$p < .005$
22.80	Mother Employment	125.21	6	$p < .005$
26.89	Educ. Level Head	1612.24	7	$p < .005$
26.90	Educ. Level Mother	1422.77	7	$p < .005$
39.199	Diagnostic Assessment	438.28	4	$p < .005$
39.200	Case Conference	502.15	4	$p < .005$
39.201	Indiv. Counseling	515.89	4	$p < .005$
39.202	Group Counseling	402.49	4	$p < .005$
39.203	Psychol. Treatment	308.28	4	$p < .005$
39.204	Home Visitation	783.51	4	$p < .005$
39.205	Remedial Program	731.52	4	$p < .005$
39.206	Ref. to Specialist	434.78	4	$p < .005$
39.207	Other	377.90	4	$p < .005$
42.235	Diff. Task Completion	550.79	4	$p < .005$

TABLE 3.13

Grade 2 With Kindergarten
15262 High SES Versus 3094 Low SES

Item	Description	Chi-Sq.	Deg. Fr.	Sign.-Level
7.37	No. of Schools	236.12	5	$p < .005$
9.40	Attitude vs. Educ. Expect.	2501.57	5	$p < .005$
10.41	Ability vs. Educ. Expect.	1767.68	5	$p < .005$
11.52	Social Immaturity	401.28	1	$p < .005$
11.53	Emotional Problems	584.41	1	$p < .005$
11.54	Anti-social Behavior	378.62	1	$p < .005$
11.55	Malnutrition	225.37	1	$p < .005$
11.56	Family Instability	1685.40	1	$p < .005$
12.63	Potential Dropout	1099.26	1	$p < .005$
12.66	Neglected or Delinq. Pupils	603.06	1	$p < .005$
13.69	Race	3169.30	5	$p < .005$
19.75	Head of Household	1734.14	8	$p < .005$
20.76	Welfare	5006.07	3	$p < .005$
20.77	Employment Status	3135.92	4	$p < .005$
22.80	Mother Employment	417.94	6	$p < .005$
26.89	Educ. Level Head	3596.05	7	$p < .005$
26.90	Educ. Level Mother	3397.82	7	$p < .005$
39.199	Diagnostic Assessment	571.50	4	$p < .005$
39.200	Case Conference	673.35	4	$p < .005$
39.201	Indiv. Counseling	573.72	4	$p < .005$
39.202	Group Counseling	344.22	4	$p < .005$
39.203	Psychol. Treatment	435.71	4	$p < .005$
39.204	Home Visitation	1111.86	4	$p < .005$
39.205	Remedial Program	851.53	4	$p < .005$
39.206	Ref. to Specialist	538.54	4	$p < .005$
39.207	Other	386.74	4	$p < .005$
42.235	Diff. Task Completion	720.60	4	$p < .005$

TABLE 3.14

Grade 2 No Kindergarten
3660 High SES Versus 1317 Low SES

Item	Description	Chi-Sq.	Deg. Fr.	Sign.-Level
7.37	No. of Schools	99.18	4	$p < .005$
9.40	Attitude vs. Educ. Expect.	786.35	5	$p < .005$
10.41	Ability vs. Educ. Expect.	565.67	4	$p < .005$
11.52	Social Immaturity	127.22	1	$p < .005$
11.53	Emotional Problems	91.43	1	$p < .005$
11.54	Anti-social Behavior	117.20	1	$p < .005$
11.55	Malnutrition	180.76	1	$p < .005$
11.56	Family Instability	555.24	1	$p < .005$
12.63	Potential Dropout	449.30	1	$p < .005$
12.66	Neglected or Delinq. Pupils	189.74	1	$p < .005$
13.69	Race	675.41	4	$p < .005$
19.75	Head of Household	322.22	8	$p < .005$
20.76	Welfare	1045.32	3	$p < .005$
20.77	Employment Status	666.08	4	$p < .005$
22.80	Mother Employment	137.50	6	$p < .005$
26.89	Educ. Level Head	907.50	6	$p < .005$
26.90	Educ. Level Mother	842.50	5	$p < .005$
39.199	Diagnostic Assessment	183.85	4	$p < .005$
39.200	Case Conference	273.75	4	$p < .005$
39.201	Indiv. Counseling	256.66	4	$p < .005$
39.202	Group Counseling	128.34	4	$p < .005$
39.203	Psychol. Treatment	111.77	4	$p < .005$
39.204	Home Visitation	366.03	4	$p < .005$
39.205	Remedial Program	239.18	4	$p < .005$
39.206	Ref. to Specialist	201.90	4	$p < .005$
39.207	Other	147.67	4	$p < .005$
42.235	Diff. Task Completion	290.71	4	$p < .005$

TABLE 3.15

Grade 4 With Kindergarten
13718 High SES Versus 2602 Low SES

Item	Description	Chi-Sq.	Deg. Fr.	Sign.-Level
7.37	No. of Schools	181.06	5	$p < .005$
9.40	Attitude vs. Educ. Expect.	1964.70	5	$p < .005$
10.41	Ability vs. Educ. Expect.	1130.63	5	$p < .005$
11.52	Social Immaturity	313.00	1	$p < .005$
11.53	Emotional Problems	562.56	1	$p < .005$
11.54	Anti-social Behavior	285.32	1	$p < .005$
11.55	Malnutrition	188.20	1	$p < .005$
11.56	Family Instability	1322.60	1	$p < .005$
12.63	Potential Dropout	916.98	1	$p < .005$
12.66	Neglected or Delinq. Pupils	404.56	1	$p < .005$
13.69	Race	2611.21	5	$p < .005$
19.75	Head of Household	1543.31	8	$p < .005$
20.76	Welfare	3812.25	3	$p < .005$
20.77	Employment Status	2492.92	4	$p < .005$
22.80	Mother Employment	303.29	6	$p < .005$
26.89	Educ. Level Head	2875.66	7	$p < .005$
26.90	Educ. Level Mother	2458.20	7	$p < .005$
39.199	Diagnostic Assessment	680.90	4	$p < .005$
39.200	Case Conference	822.55	4	$p < .005$
39.201	Indiv. Counseling	685.38	4	$p < .005$
39.202	Group Counseling	474.22	4	$p < .005$
39.203	Psychol. Treatment	387.75	4	$p < .005$
39.204	Home Visitation	974.76	4	$p < .005$
39.205	Remedial Program	1022.26	4	$p < .005$
39.206	Ref. to Specialist	506.94	4	$p < .005$
39.207	Other	732.12	4	$p < .005$
42.235	Diff. Task Completion	663.94	4	$p < .005$

TABLE 3.16

Grade 4 No Kindergarten
3872 High SES Versus 1419 Low SES

Item	Description	Chi-Sq.	Deg. Fr.	Sign.-Level
7.37	No. of Schools	68.56	5	$p < .005$
9.40	Attitude vs. Educ. Expect.	597.85	5	$p < .005$
10.41	Ability vs. Educ. Expect.	615.63	5	$p < .005$
11.52	Social Immaturity	106.86	1	$p < .005$
11.53	Emotional Problems	124.67	1	$p < .005$
11.54	Anti-social Behavior	116.78	1	$p < .005$
11.55	Malnutrition	150.65	1	$p < .005$
11.56	Family Instability	448.30	1	$p < .005$
12.63	Potential Dropout	438.08	1	$p < .005$
12.66	Neglected or Delinq. Pupils	178.48	1	$p < .005$
13.69	Race	928.24	4	$p < .005$
19.75	Head of Household	417.58	7	$p < .005$
20.76	Welfare	1119.50	3	$p < .005$
20.77	Employment Status	716.71	4	$p < .005$
22.80	Mother Employment	81.62	6	$p < .005$
26.89	Educ. Level Head	905.02	6	$p < .005$
26.90	Educ. Level Mother	810.83	6	$p < .005$
39.199	Diagnostic Assessment	381.27	4	$p < .005$
39.200	Case Conference	255.03	4	$p < .005$
39.201	Indiv. Counseling	193.23	4	$p < .005$
39.202	Group Counseling	99.81	4	$p < .005$
39.203	Psychol. Treatment	110.30	4	$p < .005$
39.204	Home Visitation	369.26	4	$p < .005$
39.205	Remedial Program	370.39	4	$p < .005$
39.206	Ref. to Specialist	145.64	4	$p < .005$
39.207	Other	172.92	4	$p < .005$
42.235	Diff. Task Completion	257.48	4	$p < .005$

TABLE 3.17

Grade 6 With Kindergarten
11702 High SES Versus 2043 Low SES

Item	Description	Chi-Sq.	Deg. Fr.	Sign.-Level
7.37	No. of Schools	184.32	6	$p < .005$
9.40	Attitude vs. Educ. Expect.	1473.96	5	$p < .005$
10.41	Ability vs. Educ. Expect.	983.83	5	$p < .005$
11.52	Social Immaturity	239.94	1	$p < .005$
11.53	Emotional Problems	345.29	1	$p < .005$
11.54	Anti-social Behavior	267.35	1	$p < .005$
11.55	Malnutrition	119.86	1	$p < .005$
11.56	Family Instability	984.65	1	$p < .005$
12.63	Potential Dropout	742.77	1	$p < .005$
12.66	Neglected or Delinq. Pupils	340.31	1	$p < .005$
13.69	Race	2292.75	5	$p < .005$
19.75	Head of Household	1256.60	8	$p < .005$
20.76	Welfare	2959.14	3	$p < .005$
20.77	Employment Status	1963.21	4	$p < .005$
22.80	Mother Employment	243.47	6	$p < .005$
26.89	Educ. Level Head	2297.56	7	$p < .005$
26.90	Educ. Level Mother	2005.09	7	$p < .005$
39.199	Diagnostic Assessment	567.33	4	$p < .005$
39.200	Case Conference	622.81	4	$p < .005$
39.201	Indiv. Counseling	528.45	4	$p < .005$
39.202	Group Counseling	406.03	4	$p < .005$
39.203	Psychol. Treatment	366.26	4	$p < .005$
39.204	Home Visitation	977.13	4	$p < .005$
39.205	Remedial Program	872.35	4	$p < .005$
39.206	Ref. to Specialist	485.55	4	$p < .005$
39.207	Other	422.35	4	$p < .005$
42.235	Diff. Task Completion	546.27	4	$p < .005$

TABLE 3.18

Grade 6 No Kindergarten
4527 High SES Versus 1518 Low SES

Item	Description	Chi-Sq.	Deg. Fr.	Sign.-Level
7.37	No. of Schools	35.68	6	$p < .005$
9.40	Attitude vs. Educ. Expect.	694.01	4	$p < .005$
10.41	Ability vs. Educ. Expect.	579.11	4	$p < .005$
11.52	Social Immaturity	77.46	1	$p < .005$
11.53	Emotional Problems	168.07	1	$p < .005$
11.54	Anti-social Behavior	92.10	1	$p < .005$
11.55	Malnutrition	73.08	1	$p < .005$
11.56	Family Instability	458.08	1	$p < .005$
12.63	Potential Dropout	430.62	1	$p < .005$
12.66	Neglected or Delinq. Pupils	175.07	1	$p < .005$
13.69	Race	819.71	4	$p < .005$
19.75	Head of Household	389.09	8	$p < .005$
20.76	Welfare	1013.06	3	$p < .005$
20.77	Employment Status	769.70	4	$p < .005$
22.80	Mother Employment	77.55	6	$p < .005$
26.89	Educ. Level Head	881.56	6	$p < .005$
26.90	Educ. Level Mother	761.52	7	$p < .005$
39.199	Diagnostic Assessment	259.40	4	$p < .005$
39.200	Case Conference	310.27	4	$p < .005$
39.201	Indiv. Counseling	279.79	4	$p < .005$
39.202	Group Counseling	203.48	4	$p < .005$
39.203	Psychol. Treatment	177.53	4	$p < .005$
39.204	Home Visitation	460.44	4	$p < .005$
39.205	Remedial Program	445.72	4	$p < .005$
39.206	Ref. to Specialist	245.61	4	$p < .005$
39.207	Other	214.55	4	$p < .005$
42.235	Diff. Task Completion	306.46	4	$p < .005$

Teacher judgments concerning malnutrition. Teachers judged more LSES pupils as having a persistent problem of malnutrition than HSES pupils. This was true regardless of the subpopulations compared.

Teacher judgments concerning family instability. Teachers judged that a significantly greater number of LSES pupils came from families with a persistent problem of family instability than HSES pupils. This was true regardless of the subpopulations compared.

Teacher judgments concerning potential dropout. Teachers judged that a significantly greater number of LSES pupils were potential dropouts than HSES pupils. This was true regardless of the subpopulations compared.

Teacher judgments concerning neglected or delinquent pupils. As previously mentioned, this item is somewhat ambiguous because of the lack of distinction between a neglected or a delinquent pupil. Disregarding this ambiguity, teachers judged a significantly greater number of LSES pupils to be neglected or delinquent than HSES pupils. This was true regardless of the subpopulations examined.

Race. There were five possible categories for race--American Indian, Negro, Oriental, Spanish-surname and none of the above. "None of the above" is assumed to mean Caucasian. This item is of particular interest because of the large magnitude of differences. These major differences can be stated in two ways. First, there were proportionally many more Negro and Spanish surname pupils identified as LSES than HSES. Or, a second way of stating this is that there were proportionally many more Caucasians and oriental children identified as HSES than LSES.

Relationship of the head of household to the pupil. In response to this question there were two very meaningful relationships. First, the greater proportion of pupils from families where the father was head of

household were in the HSES group. Second, the greater proportion of pupils from families where the mother was head of household were in the LSES group.

Family receiving welfare. The proportion of pupils coming from families receiving welfare was much greater for pupils who were identified as LSES than those identified as HSES.

Employment status of head of household. For pupils identified as HSES, the heads of household were regularly employed almost twice as frequently as those identified as LSES. Also, chronic unemployment was much greater among families of LSES.

Type of employment. The type of employment of the primary supporter of the family for LSES pupils primarily involved semiskilled or unskilled laborers or workers, whereas HSES pupils were more likely to come from families where the principal supporter was engaged in skilled work, sales work, management activities, office work, or professional activities.

Mother employed. There were six possible responses related to the employment of pupil's mothers. These were: mother deceased, no mother in the home, part-time or seasonal work, full-time steady work, not working, and no information. The greatest difference immediately apparent was the lack of information concerning the status of the mother for LSES pupils. HSES pupils were more likely to have a mother working either full-time or not working, whereas LSES pupils were more likely to have a mother deceased or doing part-time or seasonal work, or data would be lacking about mother's employment. The latter response accounted for the greatest difference between the groups.

Estimated educational level of head of household. The estimated educational level for the head of household of LSES pupils was much lower than for HSES pupils. This was true for all subpopulations examined.

Estimated educational level of mother. The estimated educational level of the mothers of LSES pupils was lower than that of HSES pupils. This was true regardless of the subpopulations examined.

Special services received, needed, not needed, and not available. Nine questions were concerned with the following special services: (1) diagnostic assessment of academic, social or emotional programs, (2) case conference with teacher and other school personnel regarding problems of the pupil, (3) individual counseling, (4) group counseling, (5) psychological treatment activity, (6) home visitation activity, (7) remedial program carried out cooperatively with the teacher, (8) referral to specialist or agency outside the school, and (9) other miscellaneous activities. For each of these responses the teacher was to indicate whether (1) the pupil received the service, (2) the pupil needed the service, (3) the pupil did not need the service, or (4) the activity was not available.

As mentioned in Chapter 1, there is considerable ambiguity between the responses "activity not available," "pupil needed service" and "pupil did not need the service." However, for each of these questions pupils identified as LSES received more services or were identified to need more services. On the other hand, more HSES pupils were classified as not needing a particular service.

Completion of difficult task. LSES pupils were more likely than HSES pupils to give up without trying, start a problem but give up rapidly,

or persist for some time but fail to complete a task. HSES pupils were more likely to complete difficult tasks that were assigned.

Summary of Comparisons of Pupils Identified To Be Socio-economically Disadvantaged with Other Pupils

Figures 3.1 through 3.6 graphically illustrate the variation in achievement between pupils identified as LSES and HSES. If the mean scores of these groups were used to estimate expected percentiles on norm tests, the expected percentile of the LSES pupil would be approximately in the 25th percentile. On the other hand, the expected percentile for the HSES pupil was usually about the 50th percentile or slightly greater.

Tables. 3.1 through 3.6 summarize a variety of profile analyses using Cattell's pattern similarity index. In almost all instances the differences between the profiles of LSES and HSES groups were significant at the .01 level. This was true regardless of what other subpopulation characteristics existed, with the exception of the profiles related to teacher observations of needed services for a small sample of sixth-grade students who had preschool.

An item-by-item comparison of the various LSES subpopulations with the HSES subpopulations provided similar results. Four specific subpopulations from each grade were examined; for example, those known to have preschool, those known not to have preschool, those known to have kindergarten, and those known not to have kindergarten. All of the comparisons, except the sample involving sixth-grade children with preschool (a very small sample), yielded statistically significant differences on all items.

Qualitatively, these differences could be summarized in the following manner: socioeconomically disadvantaged (LSES) pupils, regardless of their grade or whether they had preschool or kindergarten, were (1) likely to have attended more schools, (2) expected by teachers to complete fewer grades of school as estimated by their present attitudes, (3) expected by teachers to complete fewer grades of school as estimated by their ability, (4) more likely to be socially immature, (5) more likely to have emotional problems, (6) more likely to exhibit antisocial behavior, (7) more likely to be malnourished, (8) more likely to come from unstable families, (9) more likely to be classified as potential dropouts, (10) more likely to be classified as neglected or delinquent pupils, (11) more likely to come from black or Mexican minorities, (12) less likely to have come from a family where the father was the head of the household, (13) more likely to come from a family where the mother was the head of the household, (14) more likely to come from a family that was receiving welfare payments, (15) less likely to come from a family where the head of household was regularly employed, (16) more likely to come from a family where the employment of the head of household was semi- or unskilled, (17) more likely to come from a family where the estimated educational achievement of the head of the household was lower than that of HSES families, (18) more likely to have a mother whose estimated educational completion was lower than that of HSES mothers, (19) more likely to have received or needed special diagnostic assessment, (20) more likely to need or receive case conferences with teachers or other personnel, (21) more likely to have received or needed individual counseling, (22) more likely to have received or needed group counseling, (23) more likely to have received or needed psychological treatment, (24) more likely to have received or needed home visitation

activities, (25) more likely to have received remedial programs, (26) more likely to have received or needed special referral to an agency outside the school, (27) more likely to have received or needed other types of activities, and (28) less likely to be able to complete difficult tasks.

An examination of the tables in this chapter and of Tables 2.15 through 2.42 indicates that the amount of difference between groups identified as LSES and HSES was much greater than the difference between any of the subpopulations when these factors were controlled. Figures 3.1 to 3.6 illustrate the extent of variation between HSES pupils having preschool or not having preschool and having kindergarten or not having kindergarten, and the variation between LSES pupils having preschool or not having preschool and having kindergarten or not having kindergarten. In no instance does the fact that they have had a special program begin to make up for the difference resulting from socioeconomic status. Even on comparisons of LSES pupils who had preschool or kindergarten programs with HSES pupils who did not have such programs, HSES pupils were favored. On statistical comparisons, the HSES groups without kindergarten or preschool were significantly better in achievement than LSES groups.

CHAPTER IV: COMPARISON OF SUBPOPULATIONS THAT HAD PRESCHOOL WITH THOSE THAT DID NOT

Implications from the analysis of 1969-70 elementary school data for federal expenditures on preschool programs will be examined in this chapter. This will be done by comparing achievement test scores for pupils who were in grade 2, grade 4 and grade 6 during the 1969-70 school year. The selected subpopulations to be compared are LSES pupils known to have preschool with those known not to have preschool, and HSES pupils known to have preschool with HSES pupils known not to have preschool. The achievement test scores to be examined are in the areas of reading, mathematics and language.

In addition to achievement test data, findings will also be examined concerning demographic information, professional judgments about pupils, and professional observations.

Some comparisons are made chronologically according to the estimated dates when pupils entered preschool. Thus, comparisons for grade 6 will be examined first; next, grade 4; and finally, grade 2. This is done so that any trends indicative of increased federal expenditures for preschool programs may be identified. Sixth graders who had preschool most likely attended during 1961, 1962 or 1963 when there were limited federal programs for early childhood. So grade 6 data will be examined first, followed by data from grade 4 and grade 2--in the order of increasing probability that the pupils could be assisted by federal expenditures for preschool programs.

Problems of Missing Data

In Chapter 1 an overview of various problems, including the problem of missing data, was presented. In Chapter 2 Tables 2.4, 2.5 and 2.6 summarize these problems in greater detail. The first problem arose from the lack of knowledge about whether pupils had or did not have preschool. Information found in Table 1.6 of Chapter 1 indicates that there was no knowledge about whether or not pupils had preschool for 57.7% of the children in grade 6, 57.5% of the children in grade 4 and 52.4% of the children in grade 2.

Even for pupils whose preschool history was known, there was a serious lack of test data. This difficulty is summarized in Tables 2.4 through 2.6. In addition to missing test data, problems were created by differences in the tests themselves. This difficulty is also apparent in Tables 2.4 through 2.6.

Possible Evidence of the Impact of Federal Expenditures for Preschool Programs

One major problem with the data was the lack of information concerning the type of preschool program a pupil might have had. Because of this limitation, it is not possible to say to what extent the information presented in the remainder of this chapter was influenced by federal expenditures. However, considering the extent of federal expenditures for preschool programs during the mid and late 60's, it would seem reasonable to attribute at least some of the observable effects to these expenditures.

Table 4.1 provides descriptive statistics which might be the results of increased federal expenditures for preschool programs. An examination of this table shows a progressive increase in numbers of children involved in preschool programs from grades 6 to 4 to 2. Of the HSES children whose preschool history was known, 12% of the sixth-grade pupils had preschool compared to 23% of the fourth graders and 34% of the second graders. Similarly, for those identified as LSES, preschool attendance increased from 6% (sixth graders) to 30% (fourth graders) to 46% (second graders). Considering the likelihood that LSES children might come from families who were not able to pay for preschool programs, it seems reasonable that these children might have attended federally funded programs. Furthermore, remembering that only the most disadvantaged were identified by teachers as LSES, it seems reasonable that some who were not identified as LSES might also have been involved in federal programs. This could account for part of the increase in preschool attendance shown in Table 4.1 for higher SES pupils.

A portion of Table 2.29 has been included in this chapter as Table 4.2. This table shows the type of occupation of the person who was considered the primary supporter of the pupil's family. Also included is a portion of Table 2.25 (Table 4.3) showing racial distribution of LSES and HSES pupils. An examination of these two tables provides evidence that the type of children attending preschool was changing during the early, mid, and late 60's as is evidenced by the different proportion of children with preschool experiences from various subpopulations of the second, fourth and sixth grade. This was also supported by a Cattell profile analysis (not included in this report).

TABLE 4.1

Number of Pupils With and Without Preschool

	High SES			Low SES		
	With Preschool	No Preschool	Total	With Preschool	No Preschool	Total
Grade 6	987	7393	8380	117	1903	2020
	12%	88%	100%	6%	94%	
Grade 4	2019	6704	8723	749	1709	2458
	23%	77%	100%	30%	70%	100%
Grade 2	3457	6695	10152	1420	1658	3078
	34%	66%	100%	46%	54%	100%

TABLE 4.2

Response Per Thousand For Subpopulations
Question 21 Byte 78/79

21.78/79 Indicate below the one most appropriate option describing the the usual occupation of the person who is the primary supporter of this pupil's family.

0 = ERROR
1 = Farmworker
2 = Farm Manager or owner
3 = Unskilled worker, laborer or domestic worker
4 = Semi-skilled worker
5 = Skilled worker
6 = Sales agents and Representatives
7 = Technical
8 = Manager or foreman
9 = Official
10 = Professional
11 = Don't know

N Subpopulations	Responses											
	0	1	2	3	4	5	6	7	8	9	10	11
WPS G6 HSES	061	001	005	079	152	162	094	042	096	040	209	059
WPS G4 HSES	102	010	005	169	194	146	046	030	057	024	141	075
WPS G2 HSES	106	010	010	186	210	114	047	027	052	019	111	107
NPS G6 HSES	071	012	025	141	250	186	048	036	075	019	075	061
NPS G4 HSES	070	104	027	136	242	190	053	033	075	017	073	073
NPS G2 HSES	069	007	025	136	243	186	050	033	076	016	079	080
WPS G6 LSES	214	025	000	402	162	094	000	001	001	000	000	090
WPS G4 LSES	235	027	000	355	180	061	004	000	005	000	005	129
WPS G2 LSES	269	024	001	325	170	043	003	001	002	000	003	135
NPS G6 LSES	281	039	006	300	175	057	003	006	007	001	006	119
NPS G4 LSES	263	042	004	312	173	053	002	005	002	001	004	139
NPS G2 LSES	280	030	005	277	155	049	004	002	004	002	002	191

TABLE 4.3

Response Per Thousand For Subpopulations
Question 13 Byte 69

13.69 Indicate below if this pupil is a member of any of the following racial or national origin groups.

1 = American Indian
2 = Negro
3 = Oriental
4 = Spanish-surnamed American (persons of Cuban, Mexican, or Puerto Rican descent)
5 = None of the above

N Subpopulations	0	1	2	3	4	5	6	7	8
987 WPS G6 HSES	15	1	245	24	37	677			
2139 WPS G4 HSES	16	2	381	23	83	494			
3457 WPS G2 HSES	14	2	409	17	97	461			
7393 NPS G6 HSES	17	64	184	15	54	728			
6704 NPS G4 HSES	16	2	148	13	58	762			
6695 NPS G2 HSES	16	3	138	12	69	762			
117 WPS G6 LSES	9	0	769	0	137	85			
749 WPS G4 LSES	13	8	673	4	198	104			
1420 WPS G2 LSES	9	4	649	4	199	135			
1903 NPS G6 LSES	10	10	569	2	144	265			
1709 NPS G4 LSES	8	5	494	6	194	293			
1658 NPS G2 LSES	11	8	461	2	231	286			

An examination of HSES groups with preschool in grades 6, 4 and 2 indicates that the proportion of persons who were primary supporters of families in certain occupational categories (such as (1) skilled workers, (2) sales agents and representatives, (3) workers employed in technical areas, (4) managers or foremen, (5) office workers, and (6) professionals) steadily decreased from grades 6 to 4 to 2. On the other hand, the numbers in categories which could be classified as farm workers, laborers and semiskilled workers increased from grades 6 to 4 to 2. This might be interpreted to mean that increasing numbers of HSES children were receiving federal assistance to obtain day care or some other form of preschool program. One reason for this possible interpretation is that children in the sixth grade would have had minimal opportunity to obtain federal assistance because of lack of programs while they were attending preschool. Thus, it must be assumed that most of these children had their expenses paid by their parents. This might also account for the larger proportion of professional, management, and sales types of occupations which are usually associated with higher income. As federal funds became available children from less affluent homes, but who were not identified by their teachers as LSES, might have had more opportunities for preschool experiences because of some form of federal assistance. This could be a possible explanation for the apparent changing occupational patterns.

As mentioned in the first chapter, estimates of family income for the most part are ignored because of their questionable validity. However, for whatever validity may exist, these estimates support the hypothesis that the income of HSES families decreased from the sixth grade to the fourth grade to the second grade.

Comparison of Achievement Test Data

In Figures 4.1, 4.2 and 4.3 achievement test score data is summarized and then reported in greater detail in Tables 4.4, 4.5 and 4.6. Reading achievement test scores for LSES and HSES pupils are summarized in Figure 4.1 according to grades--grade 2, grade 4 and grade 6. In Figures 4.2 and 4.3 similar summaries appear for mathematics and for language skills. In the summary figures the results of achievement test scores have been combined regardless of the test that was used. The additional data provided in Tables 4.4 through 4.6 show the results of specific tests for which there were sufficient responses to yield meaningful results. An examination of these tables shows that there were test scores for a relatively large number of HSES pupils but fewer test scores were reported for LSES pupils. In some instances degrees of freedom, values for t and the critical value of t have been deleted in the last three columns because of the extremely small sample sizes with test scores for one of the groups being compared (usually the LSES group).

Achievement test data for HSES pupils having and not having preschool.

An examination of the summary data shows only one instance where there is a statistically significant difference at the .05 level between LSES pupils who had preschool and those who did not have preschool. This significant difference appeared with scores for sixth-grade mathematics. However, it should be noted that the sample size of those having preschool and mathematics test scores is very small (42). Furthermore, this represents the combined scores for pupils having taken any of the achievement tests

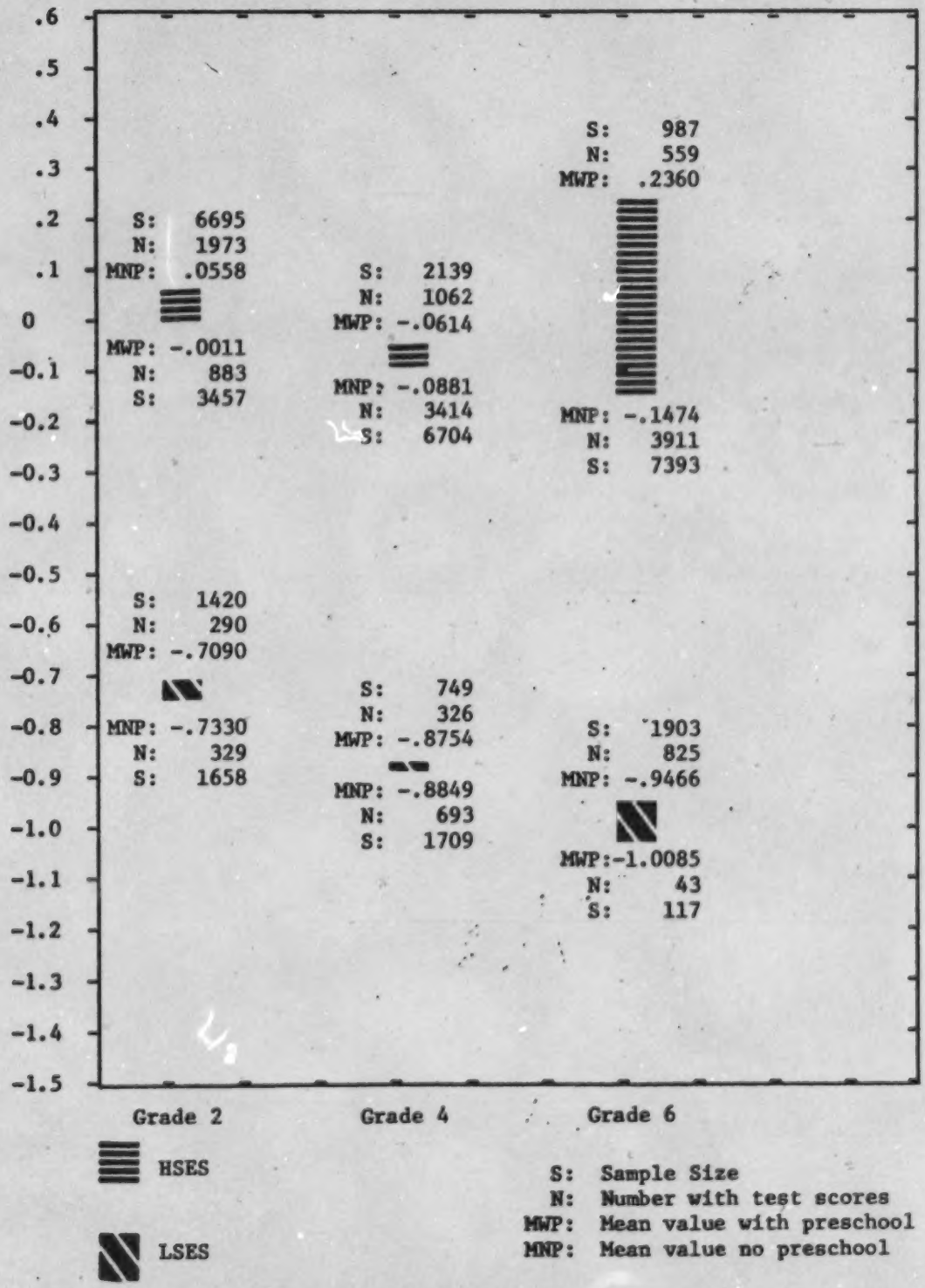

FIGURE 4.1

Reading: Analysis of Achievement Test Scores
Preschool versus No Preschool

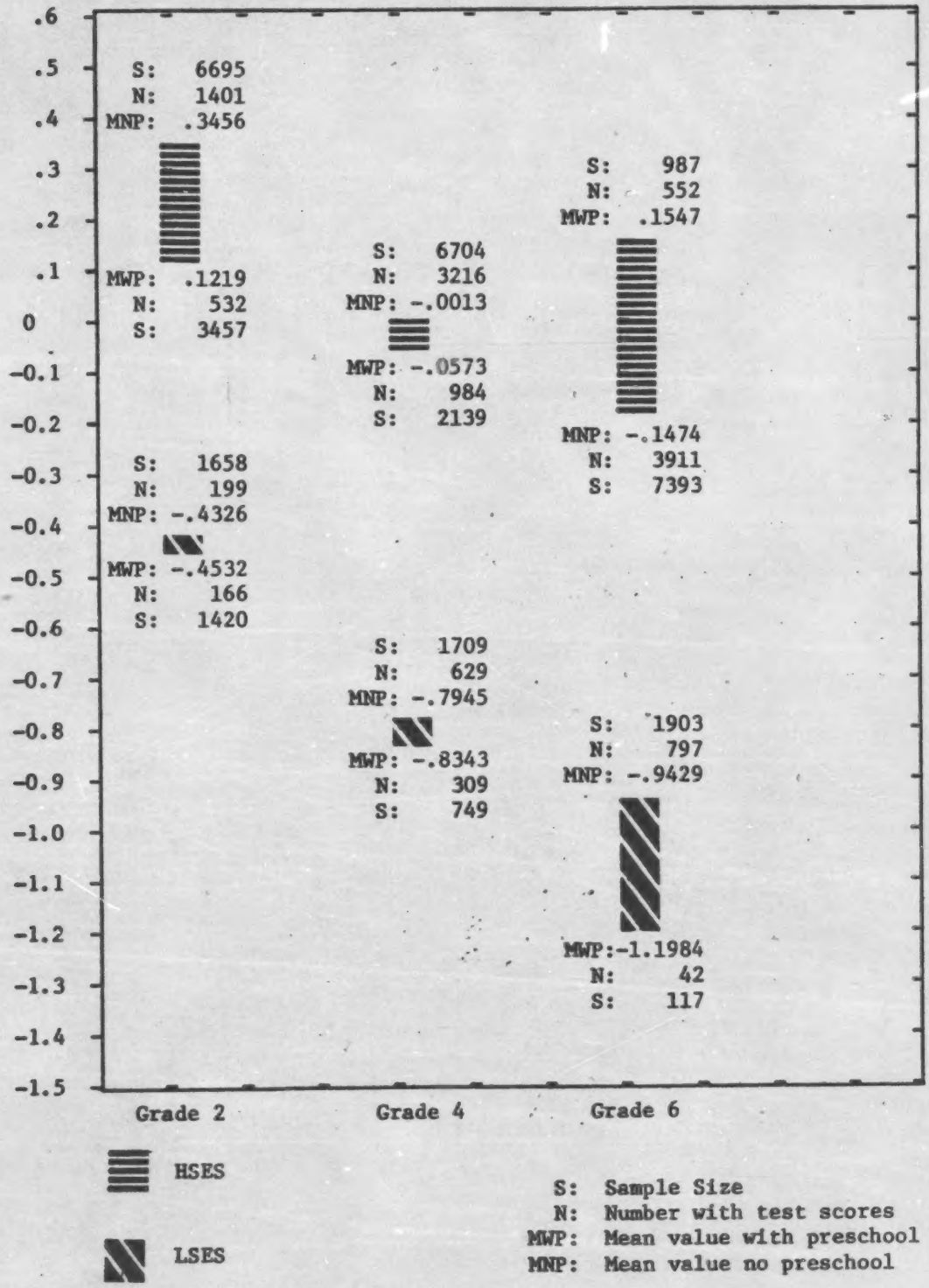

FIGURE 4.2

Mathematics: Analysis of Achievement Test Scores
Preschool versus No Preschool

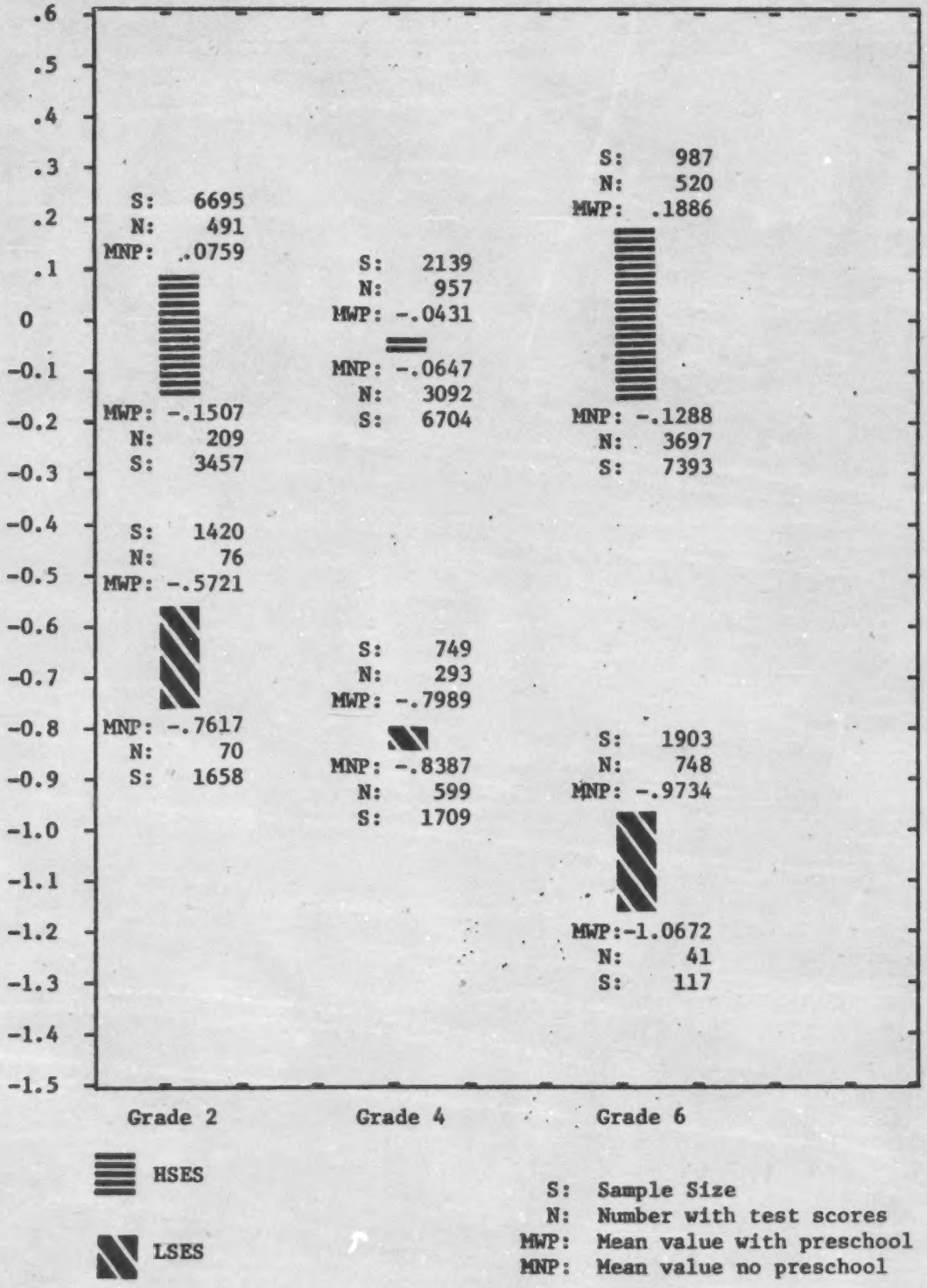

FIGURE 4.3

Language: Analysis of Achievement Test Scores
Preschool versus No Preschool

TABLE 4.4

Grade 2 - Achievement Test Score Analysis
Preschool Versus No Preschool

Achievement Tests	Preschool Sample Size	Preschool Number With Test Scores	Preschool Mean	No Preschool Sample Size	No Preschool Number With Test Scores	No Preschool Mean	Degrees of Freedom	t	Critical t for $p < .05$
Reading: HSES									
CAT-Lower Primary	117	45	.1835	248	117	.0053	160	.7747	1.960
MAT-Primary I	331	155	.0397	577	360	.2871	513	-2.5386	1.960
MAT-Primary II	94	75	.3568	145	114	.2993	187	.4219	1.960
SAT-Primary I	366	292	-.0643	1035	796	-.0276	1086	-.4271	1.960
Combined	3457	883	-.0011	6695	1973	.0558	2854	-1.2290	1.960
LSES									
CAT-Lower Primary	57	26	-.8001	47	20	-.8332	44	.0996	2.016
MAT-Primary I	181	75	-.5399	176	71	-.4597	144	-.4959	1.960
MAT-Primary II	21	14	-.2959	25	15	-.2131	27	-.2842	2.050
SAT-Primary I	105	83	-.9862	159	110	-.9482	191	-.2648	1.960
Combined	1420	290	-.7090	1658	329	-.7330	617	.3080	1.960
Mathematics: HSES									
CAT-Lower Primary	117	33	.2542	248	76	.2236	107	.1392	1.984
MAT-Primary I	331	114	.2448	577	317	.6688	429	-4.2362	1.960
MAT-Primary II	94	51	.2344	145	97	.3783	146	-1.0239	1.960
SAT-Primary I	366	214	.1386	1035	663	.2869	875	-1.7585	1.960
Combined	3457	532	.1219	6695	1401	.3456	1931	-4.2682	1.960
LSES									
CAT-Lower Primary	57	23	-.7020	47	14	-.6226	35	-.1883	2.030
MAT-Primary I	181	42	-.0481	176	60	-.2087	100	.7040	1.987
MAT-Primary II	21	10	-.3488	25	11	-.3095	19	-.0897	2.090
SAT-Primary I	105	61	-.5456	159	80	-.5558	139	.0599	1.960
Combined	1420	166	-.4532	1658	199	-.4326	363	-.1831	1.960

TABLE 4.4 continued

Grade 2 - Achievement Test Score Analysis
Preschool Versus No Preschool

Achievement Tests	Preschool Sample Size	Preschool Number With Test Scores	Preschool Mean	No Preschool Sample Size	No Preschool Number With Test Scores	No Preschool Mean	Degrees of Freedom	t	Critical t for $p < .05$
Language: HSES									
CAT-Lower Primary	117	31	.5384	248	69	.2402	98	1.0385	1.987
MAT-Primary I	331	21	.2283	577	85	.2014	104	.0934	1.985
MAT-Primary II	94	2	.1660	145	19	.3213	19	-.1999	2.090
SAT-Primary I	366	81	-.2580	1035	206	.0995	285	-2.4630	1.960
Combined	3457	209	-.1507	6695	491	.0759	698	-2.3716	1.960
LSES									
CAT-Lower Primary	57	22	-.3762	47	12	-.4102	32	.0800	2.036
MAT-Primary I	181	5	-.7530	176	5	-1.3260	8	1.0673	2.310
MAT-Primary II	21	3	-.1747	25	2	-.6055	3	.2957	3.180
SAT-Primary I	105	30	-.6137	159	37	-.8753	65	1.0839	1.998
Combined	1420	76	-.5721	1658	70	-.7617	144	1.1026	1.960

TABLE 4.5

Grade 4 Achievement Test Score Analysis
Preschool Versus No Preschool

Achievement Tests	Preschool Sample Size	Preschool Number With Test Scores	Preschool Mean	No Preschool Sample Size	No Preschool Number With Test Scores	No Preschool Mean	Degrees of Freedom	t	Critical t for $p < .05$
Reading: HSES									
CAT-Upper Primary	59	28	-.4877	233	106	.3170	132	-3.1420	1.960
CAT-Elementary	64	39	-.0690	226	127	.1677	164	-1.3137	1.960
IA Tests of Basic Sk.	247	222	.1262	995	862	-.0091	1082	1.8523	1.960
MAT-Elementary	302	119	-.0641	720	325	-.0480	442	-.1672	1.960
SAT-Primary II	249	182	-.1830	1064	763	-.1857	943	.0305	1.960
SAT-Intermediate I	176	133	-.2024	497	378	-.3252	509	1.1263	1.960
Combined	2139	1062	-.0614	6704	3414	-.0881	4474	.7423	1.960
LSES									
CAT-Upper Primary	19	15	-.5437	39	27	-.2357	40	-1.1945	2.020
CAT-Elementary	13	6	-1.1127	43	25	-.7965	29	-.7109	2.050
IA Tests of Basic Sk.	87	80	-.8464	194	164	-.7056	242	-1.2104	1.960
MAT-Elementary	147	53	-.7605	260	83	-.8977	134	1.1439	1.960
SAT-Primary II	87	52	-1.3778	214	133	-1.1940	183	-1.4022	1.960
SAT-Intermediate I	32	14	-.9077	64	44	-1.2059	56	1.7562	2.004
Combined	749	326	-.8754	1709	693	-.8849	1017	.1756	1.960
Mathematics: HSES									
CAT-Upper Primary	59	20	-.1191	233	92	.3683	110	-2.0678	1.983
CAT-Elementary	64	37	-.0308	226	130	.2422	165	-1.4861	1.960
IA Tests of Basic Sk.	247	222	.1771	995	859	.0834	1079	1.2392	1.960
MAT-Elementary	302	115	.0092	720	321	-.0067	434	.1471	1.960
SAT-Primary II	249	151	-.0800	1064	688	.0040	837	-.9139	1.960
SAT-Intermediate I	176	133	-.4055	497	364	-.3757	495	-.3007	1.960
Combined	2139	984	-.0573	6704	3216	-.0013	4198	-1.5099	1.960

TABLE 4.5 continued

Grade 4 Achievement Test Score Analysis
Preschool Versus No Preschool

Achievement Tests	Preschool Sample Size	Preschool Number With Test Scores	Preschool Mean	No Preschool Sample Size	No Preschool Number With Test Scores	No Preschool Mean	Degrees of Freedom	t	Critical t for $p < .05$
LSES									
CAT-Upper Primary	19	13	-.2388	39	17	.1031	28	-1.0780	2.050
CAT-Elementary	13	5	-1.0724	43	22	-.6401	25	-.8797	2.060
IA Tests of Basic Sk.	87	79	-.8856	194	163	-.6204	240	-2.2308	1.960
MAT-Elementary	147	48	-.8761	260	77	-.8424	123	-.2174	1.960
SAT-Primary II	87	51	-.9696	214	116	-.9397	165	-.2074	1.960
SAT-Intermediate I	32	14	-1.0430	64	42	-1.0618	54	.1030	2.006
Combined	749	309	-.8343	1709	629	-.7945	936	-.6792	1.960
Language: HSES									
CAT-Upper Primary	59	20	.0529	233	99	.2779	117	-.8294	1.981
CAT-Elementary	64	38	.0347	226	123	.3691	159	-1.6470	1.960
IA Tests of Basic Sk.	247	219	.2132	995	853	-.0221	1070	3.2700	1.960
MAT-Elementary	302	115	.1300	720	313	.0658	426	.6247	1.960
SAT-Primary II	249	150	-.1441	1064	666	-.1117	814	-.3407	1.960
SAT-Intermediate I	176	124	-.4251	497	345	-.4654	467	.3754	1.960
Combined	2139	957	-.0431	6704	3092	-.0647	4047	.5749	1.960
LSES									
CAT-Upper Primary	19	14	-.2440	39	20	-.3353	32	.2818	2.036
CAT-Elementary	13	5	-1.2278	43	21	-.7488	24	-1.6261	2.060
IA Tests of Basic Sk.	87	78	-.7461	194	158	-.6892	234	-.4903	1.960
MAT-Elementary	147	48	-.5761	260	73	-.8427	119	1.7532	1.980
SAT-Primary II	87	50	-1.2197	214	114	-.9153	162	-2.2232	1.960
SAT-Intermediate I	32	8	-.8190	64	37	-1.3547	43	1.9313	2.017
Combined	749	293	-.7989	1709	599	-.8387	890	.6769	1.960

TABLE 4.6

Grade 6 Achievement Test Score Analysis
Preschool Versus No Preschool

Achievement Tests	Preschool Sample Size	Preschool Number With Test Scores	Preschool Mean	No Preschool Sample Size	No Preschool Number With Test Scores	No Preschool Mean	Degrees of Freedom	t	Critical t for $p < .05$
Reading: HSES									
CAT-Elementary	80	40	.4426	538	304	.0246	342	2.4144	1.960
IA Tests of Basic Sk.	155	132	.2983	1149	979	-.1822	1109	5.4697	1.960
MAT-Elementary	7	1	-.4960	89	28	-.2815	26	-.9510	2.060
MAT-Intermediate	120	30	-.4351	632	158	-.3041	186	-.5974	1.960
SAT-Intermediate I	24	11	-.1086	354	219	-.3578	228	.9999	1.960
SAT-Intermediate II	181	155	.1344	1308	1006	-.2188	1159	4.0604	1.960
Combined	987	559	.2360	7393	3911	-.1474	4468	8.3356	1.960
LSES									
CAT-Elementary	5	1	-.8070	124	76	-1.0250	75	2.2483	1.995
IA Tests of Basic Sk.	9	6	-1.8693	232	191	-.9491	195	-3.1668	1.960
MAT-Elementary	9	2	-1.0360	84	14	-1.3419	14	1.4533	2.140
MAT-Intermediate	21	3	-.3090	227	42	-.7995	45	2.0080	2.015
SAT-Intermediate I	4	0	-.0000	122	62	-1.0259	60	10.0249	2.000
SAT-Intermediate II	15	14	-1.2845	280	209	-.9175	221	-1.8170	1.960
Combined	117	43	-1.0085	1903	825	-.9466	866	-.5004	1.960
Mathematics: HSES									
CAT-Elementary	80	40	.4307	538	297	.0710	335	3.0295	1.960
IA Tests of Basic Sk.	155	132	.2037	1149	974	-.1837	1104	4.2801	1.960
MAT-Elementary	7	1	.8410	89	22	-.4429	21	-1.7356	2.080
MAT-Intermediate	120	26	-.3545	632	137	-.2804	161	-.2950	1.960
SAT-Intermediate	24	11	-.2277	354	217	.3829	226	.3803	1.960
SAT-Intermediate II	181	156	.0525	1308	993	-.2756	1147	3.5500	1.960
Combined	987	552	.1547	7393	3821	-.1847	4371	7.2435	1.960

TABLE 4.6 continued

Grade 6 Achievement Test Score Analysis
Preschool Versus No Preschool

Achievement Tests	Preschool Sample Size	Preschool Number With Test Scores	Preschool Mean	No Preschool Sample Size	No Preschool Number With Test Scores	No Preschool Mean	Degrees of Freedom	t	Critical t for $p < .05$
LSES									
CAT-Elementary	5	2	-1.8990	124	76	-.8955	76	-2.3006	1.995
IA Tests of Basic Sk.	9	6	-1.6212	232	184	-.8837	188	-3.5754	1.960
MAT-Elementary	9	2	-.4825	84	11	-1.7212	11	8.7313	2.200
MAT-Intermediate	21	3	-.4680	227	33	-.8883	34	2.7702	2.032
SAT-Intermediate I	4	0	.0000	122	60	-.9262	60	8.2157	2.000
SAT-Intermediate II	15	13	-1.4467	280	210	-.9442	221	-1.7773	1.960
Combined	117	42	-1.1984	1903	797	-.9429	837	-2.0045	1.960
Language: HSES									
CAT-Elementary	80	39	.2056	538	292	.0067	329	.9907	1.960
IA Tests of Basic Sk.	155	129	.3344	1149	976	-.0824	1103	4.6390	1.960
MAT-Elementary	7	0	.0000	89	19	.0019	17	-.0062	2.110
MAT-Intermediate	120	24	.1651	632	132	-.0777	154	-.3628	1.960
SAT-Intermediate I	24	11	.1411	354	217	-.3486	226	1.4821	1.960
SAT-Intermediate II	181	154	.0699	1308	956	-.2496	1108	3.2881	1.960
Combined	987	520	.1886	7393	3697	-.1288	4215	6.5398	1.960
LSES									
CAT-Elementary	5	2	-1.5645	124	75	-.8915	75	-.8797	1.995
IA Tests of Basic Sk.	9	6	-1.4652	232	183	-.8884	187	-1.8847	1.960
MAT-Elementary	9	2	-.7590	84	11	-1.6375	11	2.9515	2.200
MAT-Intermediate	21	3	-.2513	227	35	-.5982	36	.7871	2.028
SAT-Intermediate I	4	0	.0000	122	60	-1.1855	58	12.2260	2.002
SAT-Intermediate II	15	14	-1.4791	280	188	-1.0877	200	-1.5376	1.960
Combined	117	41	-1.0672	1903	748	-.9734	787	-.6631	1.960

which had mathematics sections. In this one instance where there was a significant difference, it favored those pupils who had not had preschool.

Years of attendance in school compared with relative achievement. Figures 4.1, 4.2 and 4.3 illustrate an apparent trend concerning the relative achievement of LSES pupils. From the data used to construct these figures it appears that the longer these children were in school, the lower their relative scores on norm achievement tests. This is evident in scores for reading, mathematics and language. There are a number of reasons that might be hypothesized for these trends, such as (1) increasing cultural bias in the achievement tests for higher grades, (2) an occurrence due to sampling techniques, (3) a random occurrence, or (4) a decrease in relative achievement on norm tests. If this represents true decreases in relative achievement, it seems that the poor get poorer--that is, increasing negative attitudes toward school result in decreasing achievement.

Achievement test data for HSES pupils.

An examination of the combined test results for children not judged as socioeconomically disadvantaged (HSES pupils) shows five instances where there were significant differences at the .05 level between pupils who had preschool and those who did not have preschool. At the sixth-grade level there were not only significant but very meaningful test differences in reading, mathematics and language favoring pupils who had preschool. In no case were there any significant differences for children in the fourth grade.

For second-grade pupils there were significant differences in mathematics and language, favoring those pupils who did not have preschool. In reading, although there was not a significant difference for second

graders at the .05 level, the mean achievement test scores for those not having preschool was greater than for those having preschool, which was consistent in direction with the scores in mathematics and language.

It is important to be extremely careful in attempting to interpret correlational data, and it is impossible to establish cause-effect relationships. Further research is needed to determine why HSES sixth-grade pupils with preschool had higher mean achievement test scores than their counterparts who did not have preschool, while at the second-grade level those without preschool had greater mean achievement test scores than those with preschool.

There are two factors which may have contributed to this, both of which could have been affected by increasing federal expenditures for preschool programs. The first is the increasing availability of preschool programs for children from less disadvantaged families. An examination of data related to the type of occupation for the primary supporter of the family and changes in the proportion of minority groups seems to support this contention.

A second possible explanation could be a deteriorating quality of preschool programs caused by the mushrooming growth of such programs. When preschool programs were primarily paid for by families who could afford to provide them for their children, it is possible that better-qualified people were selected to operate the preschools than has been possible with the greatly expanded number of programs resulting from increased federal expenditures.

Profile Analysis of Nominal and Ordinal Data Comparing Pupils Known to Have Preschool and Known Not to Have Preschool

An examination of Tables 3.1 through 3.3 reveals that for the same economic status, (1) profiles of demographic data were not significantly similar or dissimilar, (2) profiles of teacher judgments were either significantly similar or there was no significant relationship, and (3) profiles involving teacher observations were significantly similar in all cases regardless of grades. The overall profiles combining demographic data, teacher judgments and teacher observations were significantly similar at the .01 level for grades 2 and 4 and at the .02 level for grade 6 for HSES pupils. When LSES pupils were compared, the combined profiles were significantly similar at the .01 level for grades 2, 4 and 6.

It has long been argued that profiles of responses of different groups rather than comparisons of responses to single items of different groups should be made. An examination of Tables 4.7 through 4.12 seems to support this contention, for while most of the items show significant differences between the groups being compared, the overall comparison using Cattell's profile analysis results in nonsignificant or similarly significant profiles. The relative similarities and dissimilarities are shown in Tables 3.7 through 3.12. Again, comparisons on individual items of those with and without preschool within SES groups show significant differences for all items and for all grades. However, a comparison of the values of chi-square yielding these differences shows meaningfully greater values of chi-square when HSES and LSES groups are compared. It is in this context that the profile dissimilarities and similarities are most apparent.

TABLE 4.7

Grade 2 Low Socioeconomic Status
1420 Preschool Versus 1658 No Preschool

Item	Description	Chi-Sq.	Deg. Fr.	Sign.-Level
7.37	No. of Schools	36.17	4	$p < .005$
9.40	Attitude vs. Educ. Expect.	36.83	4	$p < .005$
10.41	Ability vs. Educ. Expect.	35.59	4	$p < .005$
11.52	Social Immaturity	.945	1	
11.53	Emotional Problems	6.24	1	$p < .05$
11.54	Anti-social Behavior	0.29	1	
11.55	Malnutrition	7.40	1	$p < .01$
11.56	Family Instability	14.23	1	$p < .005$
12.63	Potential Dropout	16.45	1	$p < .005$
12.66	Neglected or Delinq. Pupils	25.45	1	$p < .005$
13.69	Race	113.77	4	$p < .005$
19.75	Head of Household	11.37	8	
20.76	Welfare	1.46	3	
20.77	Employment Status	7.38	4	
22.80	Mother Employment	31.67	6	$p < .005$
26.89	Educ. Level Head	14.95	8	
26.90	Educ. Level Mother	17.97	8	$p < .025$
39.199	Diagnostic Assessment	5.17	4	
39.200	Case Conference	21.92	4	$p < .005$
39.201	Indiv. Counseling	16.57	4	$p < .005$
39.202	Group Counseling	11.088	4	$p < .05$
39.203	Psychol. Treatment	9.38	4	
39.204	Home Visitation	14.22	4	$p < .01$
39.205	Remedial Program	13.54	4	$p < .01$
39.206	Ref. to Specialist	12.06	4	$p < .025$
39.207	Other	3.71	4	
42.235	Diff. Task Completion	10.65	4	$p < .05$

TABLE 4.8

Grade 4 Low Socioeconomic Status
749 Preschool Versus 1709 No Preschool

Item	Description	Chi-Sq.	Deg. Fr.	Sign.-Level
7.37	No. of Schools	21.41	3	$p < .005$
9.40	Attitude vs. Educ. Expect.	68.06	4	$p < .005$
10.41	Ability vs. Educ. Expect.	64.60	4	$p < .005$
11.52	Social Immaturity	5.43	1	$p < .05$
11.53	Emotional Problems	11.14	1	$p < .005$
11.54	Anti-social Behavior	3.64	1	
11.55	Malnutrition	0.16	1	
11.56	Family Instability	19.84	1	$p < .005$
12.63	Potential Dropout	22.28	1	$p < .005$
12.66	Neglected or Delinq. Pupils	8.96	1	$p < .005$
13.69	Race	111.28	5	$p < .005$
19.75	Head of Household	6.11	3	$p < .05$
20.76	Welfare	8.47	3	$p < .05$
20.77	Employment Status	9.92	4	$p < .05$
22.80	Mother Employment	13.61	6	$p < .05$
26.89	Educ. Level Head	8.11	5	
26.90	Educ. Level Mother	5.88	5	
39.199	Diagnostic Assessment	19.95	4	$p < .005$
39.200	Case Conference	11.66	4	$p < .01$
39.201	Indiv. Counseling	12.11	4	$p < .01$
39.202	Group Counseling	17.36	4	$p < .005$
39.203	Psychol. Treatment	13.03	4	$p < .025$
39.204	Home Visitation	5.37	4	
39.205	Remedial Program	14.79	4	$p < .01$
39.206	Ref. to Specialist	9.94	4	$p < .05$
39.207	Other	5.43	4	
42.235	Diff. Task Completion	18.60	4	$p < .005$

TABLE 4.9

Grade 6 Low Socioeconomic Status
117 Preschool Versus 1903 No Preschool

Item	Description	Chi-Sq.	Deg. Fr.	Sign.-Level
7.37	Nc. of Schools	2.38	3	
9.40	Attitude vs. Educ. Expect.	17.67	4	$p < .005$
10.41	Ability vs. Educ. Expect.	21.25	4	$p < .005$
11.52	Social Immaturity	.05	1	
11.53	Emotional Problems	.07	1	
11.54	Anti-social Behavior	1.83	1	
11.55	Malnutrition	0.58	1	
11.56	Family Instability	0.30	1	
12.63	Potential Dropout	3.55	1	
12.66	Neglected or Delinq. Pupils	1.74	1	
13.69	Race	21.82	2	$p < .005$
19.75	Head of Household	9.38	3	$p < .025$
20.76	Welfare	5.90	3	
20.77	Employment Status	5.29	3	
22.80	Mother Employment	17.72	5	$p < .005$
26.89	Educ. Level Head	15.28	5	$p < .01$
26.90	Educ. Level Mother	15.95	6	$p < .01$
39.199	Diagnostic Assessment	3.04	4	
39.200	Case Conference	3.41	4	
39.201	Indiv. Counseling	5.89	4	
39.202	Group Counseling	.69	4	
39.203	Psychol. Treatment	10.04	1	$p < .005$
39.204	Home Visitation	5.39	4	
39.205	Remedial Program	2.11	4	
39.206	Ref. to Specialist	8.23	4	
39.207	Other	2.49	4	
42.235	Diff. Task Completion	8.31	4	

TABLE 4.10

Grade 2 High Socioeconomic Status
3457 Preschool Versus 6695 No Preschool

Item	Description	Chi-Sq.	Deg. Fr.	Sign.-Level
7.37	No. of Schools	2.87	3	
9.40	Attitude vs. Educ. Expect.	30.54	5	$p < .005$
10.41	Ability vs. Educ. Expect.	26.21	5	$p < .005$
11.52	Social Immaturity	3.62	1	
11.53	Emotional Problems	0.38	1	
11.54	Anti-social Behavior	3.94	1	$p < .05$
11.55	Malnutrition	0.005	1	
11.56	Family Instability	347.97	1	$p < .005$
12.63	Potential Dropout	41.06	1	$p < .005$
12.66	Neglected or Delinq. Pupils	2.72	1	
13.69	Race	1068.15	5	$p < .005$
19.75	Head of Household	169.52	7	$p < .005$
20.76	Welfare	147.19	3	$p < .005$
20.77	Employment Status	65.01	4	$p < .005$
22.80	Mother Employment	204.66	6	$p < .005$
26.89	Educ. Level Head	302.33	8	$p < .005$
26.90	Educ. Level Mother	269.64	8	$p < .005$
39.199	Diagnostic Assessment	35.54	4	$p < .005$
39.200	Case Conference	31.08	4	$p < .005$
39.201	Indiv. Counseling	45.06	4	$p < .005$
39.202	Group Counseling	66.92	4	$p < .005$
39.203	Psychol. Treatment	39.60	4	$p < .005$
39.204	Home Visitation	62.70	4	$p < .005$
39.205	Remedial Program	50.08	4	$p < .005$
39.206	Ref. to Specialist	38.36	4	$p < .005$
39.207	Other	87.13	4	$p < .005$
42.235	Diff. Task Completion	10.92	4	$p < .005$

TABLE 4.11

Grade 4 High Socioeconomic Status
2139 Preschool Versus 6704 No Preschool

Item	Description	Chi-Sq.	Deg. Fr.	Sign.-Level
7.37	No. of Schools	14.33	3	$p<.005$
9.40	Attitude vs. Educ. Expect.	103.24	5	$p<.005$
10.41	Ability vs. Educ. Expect.	57.91	5	$p<.005$
11.52	Social Immaturity	0.04	1	
11.53	Emotional Problems	0.07	1	
11.54	Anti-social Behavior	1.28	1	
11.55	Malnutrition	3.47	1	
11.56	Family Instability	2.83	1	
12.63	Potential Dropout	8.89	1	$p<.005$
12.66	Neglected or Delinq. Pupils	0.91	1	
13.69	Race	623.48	5	$p<.005$
19.75	Head of Household	42.87	3	$p<.005$
20.76	Welfare	29.64	3	$p<.005$
20.77	Employment Status	9.99	4	$p<.05$
22.80	Mother Employment	65.27	6	$p<.005$
26.89	Educ. Level Head	214.24	8	$p<.005$
26.90	Educ. Level Mother	202.68	8	$p<.005$
39.199	Diagnostic Assessment	14.51	4	$p<.01$
39.200	Case Conference	20.50	4	$p<.005$
39.201	Indiv. Counseling	43.82	4	$p<.005$
39.202	Group Counseling	46.95	4	$p<.005$
39.203	Psychol. Treatment	31.97	4	$p<.005$
39.204	Home Visitation	47.61	4	$p<.005$
39.205	Remedial Program	20.00	4	$p<.005$
39.206	Ref. to Specialist	16.55	4	$p<.005$
39.207	Other	14.78	4	$p<.025$
42.235	Diff. Task Completion	20.11	4	$p<.005$

TABLE 4.12

Grade 6 High Socioeconomic Status
987 Preschool Versus 7393 No Preschool

Item	Description	Chi-Sq.	Deg. Fr.	Sign.-Level
7.37	No. of Schools	6.03	4	
9.40	Attitude vs. Educ. Expect.	176.25	5	$p<.005$
10.41	Ability vs. Educ. Expect.	120.57	4	$p<.005$
11.52	Social Immaturity	0.97	1	
11.53	Emotional Problems	0.03	1	
11.54	Anti-social Behavior	0.03	1	
11.55	Malnutrition	1.34	1	
11.56	Family Instability	0.20	1	
12.63	Potential Dropout	10.89	1	$p<.005$
12.66	Neglected or Delinq. Pupils	1.45	1	
13.69	Race	31.97	5	$p<.005$
19.75	Head of Household	7.30	5	
20.76	Welfare	18.65	3	$p<.005$
20.77	Employment Status	13.80	4	$p<.01$
22.80	Mother Employment	28.90	6	$p<.005$
26.89	Educ. Level Head	483.01	8	$p<.005$
26.90	Educ. Level Mother	514.85	8	$p<.005$
39.199	Diagnostic Assessment	30.63	4	$p<.005$
39.200	Case Conference	17.90	4	$p<.005$
39.201	Indiv. Counseling	26.23	4	$p<.005$
39.202	Group Counseling	11.67	4	$p<.025$
39.203	Psychol. Treatment	22.24	4	$p<.005$
39.204	Home Visitation	13.07	4	$p<.025$
39.205	Remedial Program	23.55	4	$p<.005$
39.206	Ref. to Specialist	15.98	4	$p<.005$
39.207	Other	20.13	4	$p<.005$
42.235	Diff. Task Completion	20.28	4	$p<.005$

The items yielding the greatest differences include teacher judgments of pupil's attitude and educational expectancy, abilities and educational expectancy, educational level of the head of household, educational level of the mother and, in some instances, employment status of mother and the race of the pupil. These factors also become of interest when they are compared across similar groups for different grades.

An overview of reported differences between pupils known to have preschool and known not to have preschool.

Despite the lack of significantly different profiles between those having preschool and not having preschool as measured by Cattell's pattern similarity index, it seems reasonable to provide a qualitative statement concerning items where there were significant differences based on a chi-square comparison. A summary of these differences is found in Tables 4.7 through 4.12. The following qualitative statements concerning the differences are based upon a comparison of the expected values with the actual values for each of the comparisons made. These have not been included in the report because of limited space. However, Tables 2.15 through 2.42 provide responses to the items analyzed, summarized on response rate per thousand population. An examination of this data provides the same type of information as a comparison of the expected and actual values.

Number of schools attended. There were significant differences for LSES pupils grades 2 and 4 and HSES pupils grade 4 in the number of schools attended. In each instance where there was a significant value, those children with preschool had attended fewer schools than those without preschool. This suggests that they may have come from a more stable population.

Teacher expectations of educational attainment compared with present estimates of pupil attitude. Regardless of grade or socioeconomic status, there was a significant difference at the .005 level for all comparisons made between those who had preschool and those who did not. In making comparisons of this data it is important to remember that those entering college--marked in category five--would also have had post-high school education and completed high school, etc., i.e., the checking of an upper category assumes that each of the lower categories has been completed. In every instance, the judgments made by teachers concerning the attitude of pupils toward school showed greater overall expectations for those having preschool to get more education than those not having preschool.

Teacher expectations of educational attainment compared with present estimates of pupil ability. Each comparison of those with and without preschool, regardless of socioeconomic status or grade, was significant at the .005 level. An examination of the actual versus expected values indicated that in all cases the differences occurred because of teacher judgments which expected those who had attended preschool to complete more grades of education as a whole than those who had not attended preschool.

Teacher judgments of social immaturity and emotional problems. An examination of Tables 4.7 through 4.12 reveals only three instances where there were any significant differences in these areas. These three instances were for grade 2 LSES pupils on the item comparing emotional problems, grade 4 LSES pupils on the items comparing social immaturity and emotional problems. In each instance of significant differences the group with preschool had a slight advantage.

Teacher judgments concerning malnutrition. In all comparisons, incidents of reported malnutrition were low. In the one case where there was a significant difference, LSES grade 2, malnutrition was judged to be greater than expected for those not having preschool.

Teacher judgments concerning family instability. In only two instances were there significant differences resulting from judgments concerning family instability. These two instances were for grade 2 and grade 4 LSES pupils. In both instances the differences resulting in significant values for chi-square came from the higher proportion of unstable families with children not having preschool. There were fewer LSES pupils with preschool in these grades who came from unstable families.

Teacher judgments concerning potential dropout. In all comparisons of pupils having preschool with those not having preschool, except for grade 6 LSES pupils, there was a significant difference at the .005 level. In all instances where there was a significant difference, this difference favored those pupils who had preschool.

Teacher judgments concerning neglected or delinquent pupils. In two instances there were significant differences at the .005 level. These two significant comparisons were for second- and fourth-grade LSES pupils. In both instances teachers judged proportionately fewer children from groups with preschool to be neglected or delinquent than their counterparts without preschool.

Race. Race was significant at the .005 level for all comparisons of pupils with and without preschool. The greatest difference was with a greater than expected number of Negro pupils in preschool programs.

Relationship of the head of household to the pupil. In each instance where there were significant differences in comparisons of who was designated

as head of the household, the mother was more likely to be the head of household in families of pupils with preschool. The father was more likely to be the head of household for families of pupils without preschool. This would be expected if the reason for obtaining preschool for a significant number of pupils was a need for child care when the mother was forced to work in order to support the family.

Family receiving welfare. For LSES pupils, whether or not the family was on welfare resulted in only minimal differences between those who had preschool and those who did not have preschool. In one instance in the fourth grade the difference was significant at the .05 level because fewer than expected pupils who had preschool came from families on welfare. The comparisons related to whether or not a child's family was on welfare for pupils not identified as LSES indicated a trend which might be related to increasing federal expenditures for early childhood programs. In all instances the comparisons were significant at the .05 level.

These comparisons indicated that proportionately fewer sixth-grade pupils with preschool came from families on welfare than pupils without preschool. On the other hand, this trend was reversed for fourth- and second-grade children, with proportionately more pupils with than without preschool coming from families receiving welfare. As mentioned previously, this could possibly be the result of the greater availability of preschool programs to families not economically able to pay for those programs and increased federal funds for day care programs that enabled mothers on welfare to work.

Employment status of head of household. There were significant differences in the employment status--how regularly the head of household

was employed--for grade 4 LSES at the .05 level, grade 2 HSES at the .005 level, grade 4 HSES at the .005 level and grade 6 HSES at the .01 level. In all instances, except for grade 4 HSES pupils, differences were largely related to the regularity of employment by the head of household.

Mother employed. In all instances comparisons between pupils having preschool and those not having preschool indicated significant differences in the employment status of the mother. These differences were significant at the .005 level in all cases except for grade 4 LSES pupils, where the difference was significant at the .05 level. In every instance a major contribution to the cumulative value for chi-square was made by the observation that mothers of pupils with preschool were more likely to be regularly employed than those of pupils without preschool, regardless of the socio-economic status or grade of the pupil.

It is important to note that the statement of employment status relates to present employment status and that there is no evidence to relate this to the employment status of the mother when the child was in preschool. However, if it is assumed that the mother who is presently employed was more likely to be employed when the child was in preschool, the findings might be indicative of the influence of child care needs on whether or not the child received preschool.

Estimated educational level of head of household and mother. There were two items that attempted to measure the educational level of (1) the head of household and (2) the mother. Differences in these educational levels were not only significant for parents of HSES pupils but they were also meaningfully large. With HSES pupils, the educational level of mothers or heads of household was greater for groups of pupils with preschool than for those without preschool.

Special services received, needed, not needed, and not available. There were nine items in the questionnaire that dealt with special services which the student might need. The possible responses to this item were (1) pupil received service, (2) pupil needed service, (3) pupil did not need service and (4) activity not available. A discussion of the ambiguity of these responses is included in Chapter 1. Ignoring this problem and assuming that all teachers dealt with the responses in a similar way, it is possible to make generalizations concerning the overall response patterns.

The comparisons as a whole favored children who had preschool for both LSES and HSES groups. In most instances, proportionately more pupils with preschool were judged as not needing a service. Again, however, caution must be used in making interpretations because of the sensitivity of the chi-square test with large numbers. The number of children known to have preschool or not to have preschool from HSES families was considerably greater than the number from LSES families. Thus, larger values of chi-square may not mean proportionately greater differences.

It is also important to note that these groups of scores were a major part of a comparison using Cattell's profile analysis. In using Cattell's profile analysis the greatest similarities were found (significant at the .01 level in most cases) between those with preschool and those without preschool when they were from the same socioeconomic group. It is for this reason that considerable caution must be used in the interpretation of these differences although they appear to be statistically significant.

Completion of difficult task. In comparing ability to complete a difficult task, there were significant differences on all but one of the comparisons. The one lack of significant difference was between LSES

sixth-grade pupils with and without preschool. The significant differences occurred because of the greater proportion of pupils with preschool who completed tasks that were assigned and the smaller proportion of pupils with preschool who were reported as not attempting tasks or giving up before completing tasks.

Summary

In response to the question "Is there information that could be interpreted as evidence of the existence of massive federal expenditures on preschool programs?" the answer would be a qualified "yes." The information that can be most appropriately interpreted in this manner relates to the progressively increasing proportion of LSES pupils with preschool from the sixth, fourth and second grades. Also, there seem to be changing population characteristics in the sixth, fourth and second grades that might be interpreted as indicating that more pupils who received preschool benefits came from families that ordinarily would not have been able to pay for preschool.

In response to the question "Has preschool made a difference in achievement on a national sample of children with preschool experiences?" the answer would have to be, in most instances, "no." Any differences were not of a magnitude great enough to overcome what may have been population differences between the groups with preschool and without preschool. The existence of what may have been population differences is evident in the pupils not classified as LSES.

The greatest significant difference occurred with sixth graders not identified as socioeconomically disadvantaged--HSES sixth graders. For these pupils, those with preschool experiences achieved significantly better in reading, mathematics and language tests. There was no significant difference for fourth graders. On the other hand, second graders without preschool scored significantly better in mathematics and language achievement tests.

For LSES pupils with preschool and without preschool there was only one instance of a significant difference. The difference favored those without preschool on mathematics achievement at the sixth grade. However, only 42 LSES pupils had both mathematics test scores and preschool.

Considering the total results of achievement test scores, it seems appropriate to state that <u>if preschool has made a difference in achievement it is not sufficient to cause large enough differences in achievement to overcome what may be variations in the subpopulations of the groups with preschool and those without preschool</u>.

Responses to items providing nominal and ordinal data usually favored in a small way pupils with preschool. Results are difficult to interpret because these pupils with preschool seemed to have an advantaged on items that related to demographic information concerning themselves and families as well as on items that related to teacher judgments or observations concerning their attitudes, abilities, need for special services or special problems that they might have. Because there is no information concerning the family at the time that a child was in preschool, it is impossible to say what relationships are the result of the family status at that time and what are the results of an interaction between the preschool program with the child and the family.

It is important to remember that a number of preschool programs, such as day care, place considerable emphasis on the education of the parents of disadvantaged children, particularly mothers, and on the placement of mothers in jobs. Thus, the fact that a child had preschool might not only reflect on the child's attitudes, abilities and reduction of various problems, but might also indicate an improved socioeconomic status of the family as a whole.

The two greatest difficulties with the data as it relates to the question of preschool are (1) the lack of information concerning what type of preschool was available and how long the child was in that type of program, and (2) the lack of information concerning the socioeconomic status of the child or his family at the time that the child was in preschool. The latter is of particular importance because it is possible that children who had preschool might have been classified at the time that they received preschool experiences as LSES, but as a result of these experiences and other programs involving the family, they may have been classified as HSES at the time the data was gathered for this study.

If there was a significant movement of this type, it could be capable of significantly affecting the overall picture obtained from the 1969-70 elementary school data. In general, it could have the effect of reducing the apparent achievement of those having preschool who were classified as LSES and, conceivably, of also reducing the relative achievement of HSES with preschool.

In response to the question "Are there meaningful differences in achievement between those having preschool and those not having preschool?" the answer would have to be a qualified "no." This is especially true if

the intent was that preschool experiences would in any way attempt to make up the differences between the socioeconomically disadvantaged children and the HSES children. The extent of the variation in Figures 4.1 through 4.3 graphically illustrates this point. This is also illustrated by the descriptive statistics found in Tables 2.15 through 2.42.

CHAPTER V: COMPARISON OF SUBPOPULATIONS THAT HAD KINDERGARTEN WITH THOSE THAT DID NOT

A major problem with the data about children who had preschool and those who did not was the lack of information concerning what type of preschool program they participated in. This ambiguity does not exist to as great an extent for kindergarten programs. It can be assumed that for the most part the programs involved children for a whole year on an approximately half-day basis.

There are two major problems, however, that do exist with the data concerning those pupils who had kindergarten and those pupils who did not have kindergarten. The first problem is the lack of test data, especially for LSES pupils who did not have kindergarten. For example, in reading there were only 260 pupils who had test scores in grade 2, 559 who had test scores in grade 4 and 560 who had test scores in grade 6. For mathematics there were only 196 pupils in grade 2 with test scores, 515 in grade 4 and 641 in grade 6. For language there were only 74 pupils in grade 2 that had achievement test scores, 495 in grade 4 and 606 in grade 6.

The second problem is the disproportionate number of children without kindergarten who came from 18 of the states. Approximately 80% of the students without kindergarten came from 18 states of which about 2/3 were southern states.

Because of this disproportionate number of children without kindergarten from specific states, it is possible that differences between groups with

and without kindergarten may be the results of differences in (1) pupil population, (2) curriculums, or (3) socioeconomic status of the states as a whole. There is also a question as to whether or not some children lacked kindergarten experience because kindergartens were not available in their school systems.

Because of this latter problem, the achievement test data were analyzed in two ways. First, the data were analyzed as though they were representative of a national sample without distinction between states. Second, the achievement of those children with kindergarten was compared with those who did not have kindergarten in the specific states that had approximately 80% of the pupils without kindergarten. But even though certain states had the majority of pupils without kindergarten, analysis within the states was often questionable because of a lack of test scores for pupils in a given subpopulation.

Because of these problems state-by-state t tests were made. However, rather than focusing on the reported value of t, emphasis has been given to the number of states where achievement was greater for children with kindergarten than for those without kindergarten, and vice versa. If there is no significant difference between the groups, there should be approximately an equal number of states (for particular subpopulations) with positive and negative values when the mean achievement scores of pupils without kindergarten are subtracted from those of pupils with kindergarten. Thus, it is possible to apply a binomial or sign test to the data to see if the number of states where achievement favored those having kindergarten for given subpopulations was significantly more or less than expected by chance.

Specifically, this chapter is divided into three sections. The first section reports the overall achievement test data for the national sample. It does not take into consideration differences between states. The second section examines the achievement test data on a state-by-state basis for the 18 states having the greatest number of pupils not attending kindergarten. The names of the states have not been identified to prevent any inferences being drawn about the specific curriculums of these states. Such inferences would be inappropriate, considering the number of pupils in the samples. The third section examines the overall difference in population characteristics for LSES pupils with and without kindergarten and HSES pupils with and without kindergarten.

Comparison of Achievement Test Data for Pupils Known to Have Kindergarten and Those Known Not to Have Kindergarten

This section examines the achievement test data in the areas of reading, mathematics and language for subpopulations from grades 2, 4 and 6. The two subpopulations considered are those identified to be socio-economically disadvantaged (LSES) and those not identified to be socio-economically disadvantaged (HSES).

In Figures 5.1 through 5.3 the achievement test results are summarized for reading, mathematics and language test scores. The achievement test data is categorized to represent pupils with and without kindergarten in LSES and HSES groups. An asterisk indicates a difference significant at the .05 level.

These figures (5.1 through 5.3) graphically demonstrate two facts. First, the difference between the LSES and the HSES groups is much greater

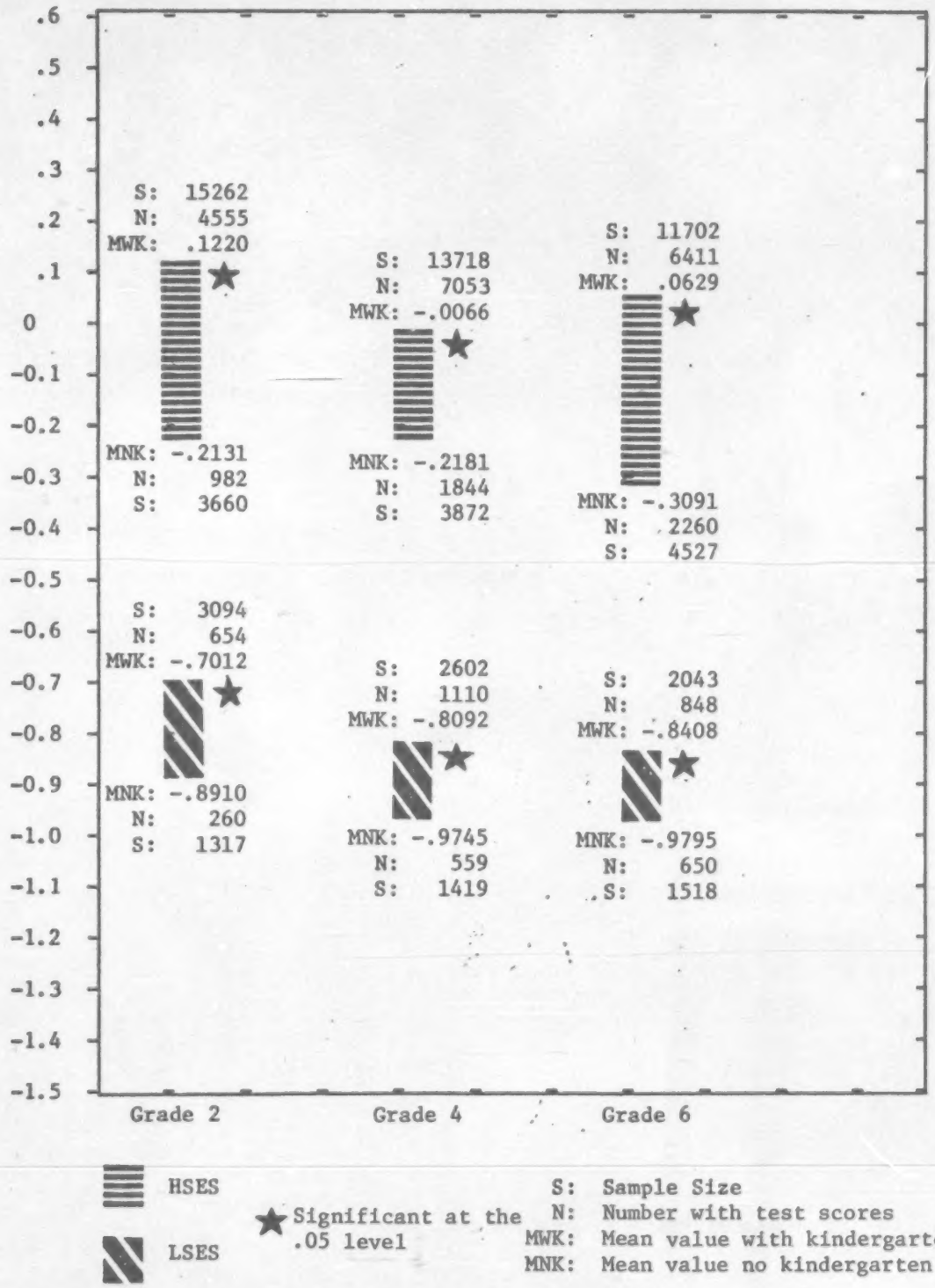

FIGURE 5.1

Reading: Analysis of Achievement Test Scores Kindergarten versus No Kindergarten

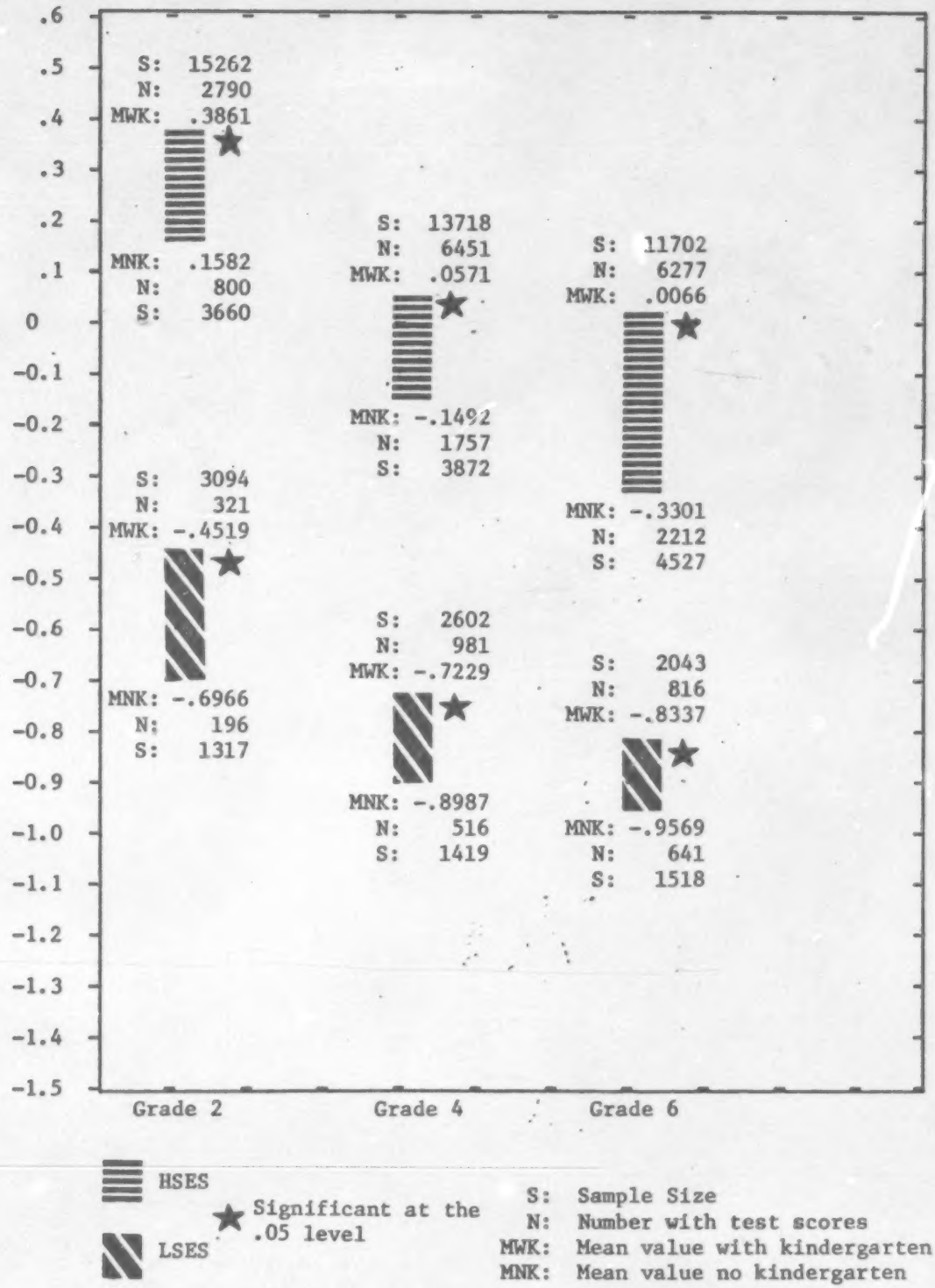

FIGURE 5.2

Mathematics: Analysis of Achievement Test Scores
Kindergarten versus No Kindergarten

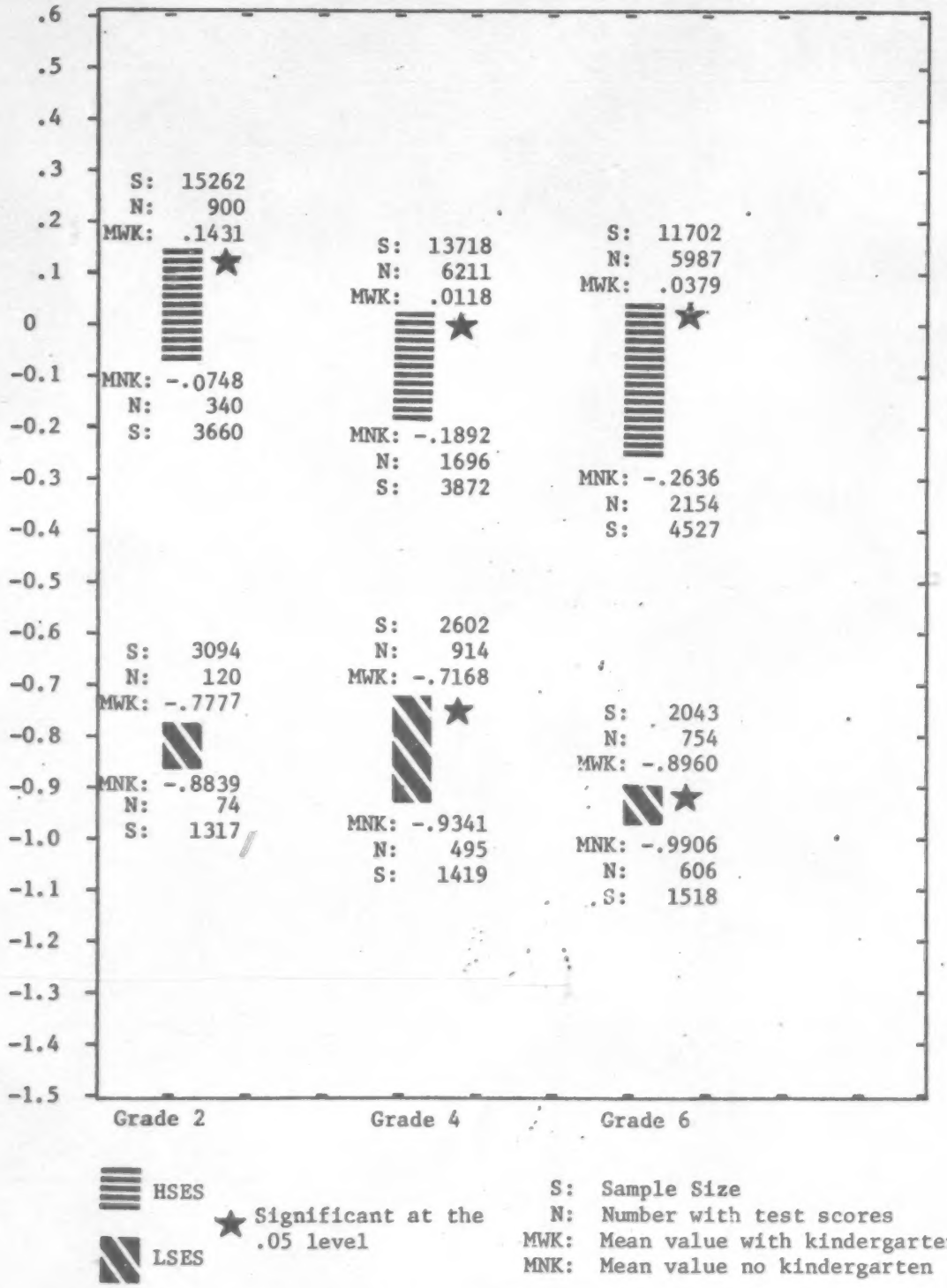

FIGURE 5.3

Language: Analysis of Achievement Test Scores
Kindergarten versus No Kindergarten

than any differences between those who had kindergarten and those who did not have kindergarten. Second, if kindergarten were the only factor affecting the difference between those with and without kindergarten (no causal relationship can be established with correlated data), then kindergarten makes a greater difference for HSES than for LSES pupils.

As seen in Figures 5.1 through 5.3, all of the differences for the various subpopulations in different grades and for different test areas were significant at least at the .05 level with the exception of language scores for grade 2 LSES pupils. In each instance the significant difference occurred because pupils with kindergarten had greater mean achievement test scores than those without kindergarten.

Tables 5.1 through 5.3 provide additional information concerning specific test scores as well as the combined results shown in Figures 5.1 through 5.3. As can be observed from these tables, the trend shown in Figures 5.1 through 5.3 is consistent with the individual specific test scores. The notable exceptions, occurring in only two instances for tests which have a very small number of pupil scores, show differences favoring those without kindergarten, significant at the .05 level.

The overall picture provided by this national sample clearly indicates that those pupils who have had kindergarten do significantly better on achievement test scores in reading, mathematics and language regardless of whether they are LSES or HSES pupils. The question that must now be considered is concerned with the reasons for children having or not having kindergarten experience and the possible effects of these factors on achievement.

At least two specific issues must be examined here. First, is there any evidence that differences occur because of specific curriculums or

TABLE

Grade 2 - Analysis of Achievement Test Scores
Kindergarten Versus No Kindergarten

Achievement Tests	Kindergarten Sample Size	Kindergarten Number With Test Scores	Kindergarten Mean	No Kindergarten Sample Size	No Kindergarten Number With Test Scores	No Kindergarten Mean	Degrees of Freedom	t	Critical t for $p < .05$
Reading: HSES									
CAT-Lower Primary	375	119	.0501	188	122	-.2016	239	1.5961	1.96
MAT-Primary I	1238	731	.4309	306	157	.0384	886	4.3801	1.96
MAT-Primary II	455	376	.3943	82	59	-.0196	433	3.2865	1.96
SAT-Primary I	2466	1913	-.0263	502	381	-.3225	2292	4.4954	1.96
Combined	15262	4555	.1220	3660	982	-.2131	5535	8.5286	1.96
LSES									
CAT-Lower Primary	63	27	-.8588	57	28	-1.0270	53	.5756	2.01
MAT-Primary I	336	145	-.5137	126	49	-.6857	192	1.2277	1.96
MAT-Primary II	70	45	-.2133	16	10	-.7052	53	1.3376	2.01
SAT-Primary I	336	218	-.9331	113	81	-.9648	297	.2540	1.96
Combined	3094	654	-.7012	1317	260	-.8910	912	2.8399	1.96
Mathematics: HSES									
CAT-Lower Primary	375	79	.1610	188	79	-.0593	156	1.2614	1.96
MAT-Primary I	1238	618	.7349	306	142	.3644	758	4.4491	1.96
MAT-Primary II	455	280	.4984	82	55	.2962	333	1.8314	1.96
SAT-PrimaryI	2466	1302	.2699	502	361	.1510	1661	2.0892	1.96
Combined	15262	2790	.3861	3660	800	.1582	3588	5.7987	1.96
LSES									
CAT-Lower Primary	63	27	-.8599	57	20	-.8058	45	-.1566	2.02
MAT-Primary I	336	90	-.0834	126	45	-.6147	133	2.6025	1.96
MAT-Primary II	70	28	-.1199	16	10	-.7154	36	1.6880	2.03
SAT-Primary I	336	136	-.5782	113	67	-.6080	201	.2071	1.96
Combined	3094	321	-.4519	1317	196	-.6966	515	2.5641	1.96

TABLE 5.1 continued

Grade 2 - Analysis of Achievement Test Scores
Kindergarten Versus No Kindergarten

Achievement Tests	Kindergarten Sample Size	Kindergarten Number With Test Scores	Kindergarten Mean	No Kindergarten Sample Size	No Kindergarten Number With Test Scores	No Kindergarten Mean	Degrees of Freedom	t	Critical t for $p < .05$
Language: HSES									
CAT-Lower Primary	375	71	.3558	188	75	-.1607	144	2.3727	1.96
MAT-Primary I	1238	121	.4726	306	41	-.1835	160	3.3717	1.96
MAT-Primary II	455	33	.6892	82	11	.0172	42	2.2206	2.02
SAT-Primary I	2466	410	.0692	502	144	.1751	552	-.9966	1.96
Combined	15262	900	.1431	3660	340	-.0748	1238	2.9449	1.96
LSES									
CAT-Lower Primary	63	26	-.8610	57	19	-.9197	43	.1734	2.02
MAT-Primary I	336	8	-1.1715	126	4	-1.0658	10	-.2136	2.23
MAT-Primary II	70	5	.0128	16	2	-1.2190	5	1.4260	2.57
SAT-Primary I	336	45	-.8368	113	31	-.7259	74	-.4769	2.00
Combined	3094	120	-.7777	1317	74	-.8839	192	.7303	1.96

TABLE 5.2

Grade 4 - Analysis of Achievement Test Scores
Kindergarten Versus No Kindergarten

Achievement Tests	Kindergarten Sample Size	Kindergarten Number With Test Scores	Kindergarten Mean	No Kindergarten Sample Size	No Kindergarten Number With Test Scores	No Kindergarten Mean	Degrees of Freedom	t	Critical t for $p < .05$
Reading: HSES									
CAT-Upper Primary	333	114	.4473	171	93	.0897	205	2.2787	1.96
CAT-Elementary	415	214	.2979	161	101	-.0278	313	2.8483	1.96
IA Test of Basic Sk.	2417	2075	.0077	355	292	-.1227	2365	2.3742	1.96
MAT-Elementary	1677	730	.0189	388	183	-.2114	911	3.1075	1.96
SAT-Primary II	1958	1323	-.0647	549	420	-.3637	1741	5.3700	1.96
SAT-Intermediate I	1028	793	-.1494	335	251	-.3633	1042	3.1346	1.96
Combined	13718	7053	-.0066	3872	1844	-.2181	8895	8.3800	1.96
LSES									
CAT-Upper Primary	42	23	-.2788	83	23	-.4268	44	.5839	2.02
CAT-Elementary	47	16	-1.3012	46	30	-.8478	44	-2.1146	2.02
IA Test of Basic Sk.	383	331	-.6829	139	123	-.8863	452	2.4323	1.96
MAT-Elementary	492	187	-.8983	212	65	-.9113	250	.1355	1.96
SAT-Primary II	275	171	-1.0892	165	101	-1.2882	270	2.0263	1.96
SAT-Intermediate I	83	52	-.7141	62	41	-1.2644	91	3.9766	2.01
Combined	2602	1110	-.8092	1419	559	-.9745	1667	4.0632	1.96
Mathematics: HSES									
CAT-Upper Primary	333	95	.5203	171	76	.0589	169	2.8450	1.96
CAT-Elementary	415	212	.3359	161	100	.1283	310	1.6188	1.96
IA Test of Basic Sk.	2417	2077	.0815	355	291	-.0966	2366	2.9206	1.96
MAT-Elementary	1677	689	.0903	388	184	-.1454	871	2.8629	1.96
SAT-Primary II	1958	1028	.1058	549	402	-.1224	1428	3.8490	1.96
SAT-Intermediate I	1028	767	-.2271	335	243	-.4137	1008	2.7900	1.96
Combined	13718	6451	.0571	3872	1757	-.1492	8206	7.6505	1.96
LSES									
CAT-Upper Primary	42	20	.2321	38	14	-.1827	32	1.2769	2.04
CAT-Elementary	47	16	-.7444	46	26	-.6723	40	-.3435	2.02
IA Test of Basic Sk.	383	329	-.6273	139	122	-.8534	449	2.4712	1.96

TABLE 5.2 continued

Grade 4 - Analysis of Achievement Test Scores
Kindergarten Versus No Kindergarten

Achievement Tests	Kindergarten Sample Size	Kindergarten Number With Test Scores	Kindergarten Mean	No Kindergarten Sample Size	No Kindergarten Number With Test Scores	No Kindergarten Mean	Degrees of Freedom	t	Critical t for $p < .05$
MAT-Elementary	492	163	-.8536	212	64	-1.0063	225	1.2340	1.96
SAT-Primary II	275	126	-.8194	165	94	-.9512	218	1.1566	1.96
SAT-Intermediate I	83	47	-.7355	62	39	-1.1907	76	3.2247	2.00
Combined	2602	981	-.7229	1419	516	-.8987	1495	3.8219	1.96
Language: HSES									
CAT-Upper Primary	333	108	.4123	171	81	.1218	187	1.9349	1.96
CAT-Elementary	415	208	.2978	161	97	.1052	303	1.4832	1.96
IA Test of Basic Sk.	2417	2057	.0276	355	291	-.1984	2346	3.8264	1.96
MAT-Elementary	1677	684	.1609	388	180	-.0162	862	2.1478	1.96
SAT-Primary II	1958	990	.0110	549	396	-.2629	1384	4.9028	1.96
SAT-Intermediate I	1028	730	-.3252	335	229	-.5041	1916	2.4035	1.96
Combined	13718	6211	.0118	3872	1696	-.1892	7905	7.4637	1.96
LSES									
CAT-Upper Primary	42	21	-.1908	38	15	-.6725	34	1.6791	2.03
CAT-Elementary	47	15	-.8266	46	25	-.7987	38	-.0951	2.02
IA Test of Basic Sk.	383	326	-.6068	139	118	-.8630	442	3.1709	1.96
MAT-Elementary	492	166	-.7836	212	60	-.8980	224	.9656	1.96
SAT-Primary II	275	114	-.8633	165	92	-.9327	204	.5529	1.96
SAT-Intermediate I	83	46	-.8826	62	32	-1.5156	76	3.9141	2.00
Combined	2602	914	-.7168	1419	495	-.9341	1407	4.8046	1.96

TABLE 5.3

Grade 6 - Analysis of Achievement Test Scores
Kindergarten Versus No Kindergarten

Achievement Tests	Kindergarten Sample Size	Kindergarten Number With Test Scores	Kindergarten Mean	No Kindergarten Sample Size	No Kindergarten Number With Test Scores	No Kindergarten Mean	Degrees of Freedom	t	Critical t for $p < .05$
Reading: HSES									
CAT-Elementary	711	416	.2774	418	245	-.2227	659	5.6343	1.96
IA Tests of Basic Sk.	2216	1955	-.0158	495	421	-.2526	2374	4.5083	1.96
MAT-Elementary	176	36	.1598	68	23	-.5108	57	2.1134	
MAT-Intermediate	1090	256	-.0662	348	105	-.4648	359	3.6975	1.96
SAT-Intermediate I	458	229	-.0328	277	191	-.4239	418	3.9608	1.96
SAT-Intermediate II	1847	1296	.0438	778	631	-.3878	1925	9.2803	1.96
Combined	11702	6411	.0629	4527	2260	-.3091	8669	15.3639	1.96
LSES									
CAT-Elementary	70	44	-.9496	126	72	-1.0430	114	.5462	1.96
IA Tests of Basic Sk.	334	293	-.8270	156	125	-1.0364	416	2.3376	1.96
MAT-Elementary	108	12	-1.2772	52	7	-1.2381	17	-.0998	
MAT-Intermediate	278	53	-.9981	180	36	-.8937	87	-.5439	
SAT-Intermediate I	88	35	-.8933	106	62	-1.0781	95	1.0703	
SAT-Intermediate II	204	135	-.8828	242	185	-.9435	318	.6729	1.96
Combined	2043	848	-.8408	1518	650	-.9795	1496	3.2347	1.96
Mathematics: HSES									
CAT-Elementary	711	418	.1607	418	236	-.2306	652	4.4752	1.96
IA Tests of Basic Sk.	2216	1940	-.0695	495	422	-.2465	2360	3.5907	1.96
MAT-Elementary	176	29	-.1579	68	19	-.5150	46	1.1707	1.96
MAT-Intermediate	1090	216	-.1546	348	104	-.3317	318	1.4186	1.96
SAT-Intermediate I	458	227	-.1304	277	187	-.4161	412	2.8962	1.96
SAT-Intermediate II	1847	1279	-.0282	778	623	-.4348	1900	8.6054	1.96
Combined	11702	6277	.0066	4527	2212	-.3301	8487	13.8727	1.96

TABLE 5.3 continued

Grade 6 - Analysis of Achievement Test Scores
Kindergarten Versus No Kindergarten

Achievement Tests	Kindergarten Sample Size	Kindergarten Number With Test Scores	Kindergarten Mean	No Kindergarten Sample Size	No Kindergarten Number With Test Scores	No Kindergarten Mean	Degrees of Freedom	t	Critical t for $p < .05$
LSES									
CAT-Elementary	70	45	-.8587	126	74	-.9245	117	.3715	
IA Tests of Basic Sk.	334	292	-.8204	156	122	-.9569	412	1.4800	1.96
MAT-Elementary	108	11	-1.4102	52	8	-1.3521	17	-.1868	
MAT-Intermediate	278	44	-.9891	180	33	-.8479	75	-.8077	
SAT-Intermediate I	88	34	-.7741	106	60	-.9511	92	.9413	
SAT-Intermediate II	204	132	-.8501	242	186	-.9425	316	.9510	1.96
Combined	2043	816	-.8337	1518	641	-.9569	1455	2.8022	1.96
Language: HSES									
CAT-Elementary	711	408	.1590	418	231	-.1340	637	3.2301	1.96
IA Tests of Basic Sk.	2216	1950	.0199	495	422	-.1431	2370	3.1888	1.96
MAT-Elementary	176	29	-.0924	68	15	.0820	42	-.4201	
MAT-Intermediate	1090	224	-.0444	348	94	-.2009	316	1.2230	1.96
SAT-Intermediate I	458	219	-.0054	277	189	-.3614	406	3.3500	1.96
SAT-Intermediate II	1847	1233	-.0159	778	619	-.3821	1850	7.2436	1.96
Combined	11702	5987	.0379	4527	2154	-.2636	8139	11.8693	1.96
LSES									
CAT-Elementary	70	44	-.9285	126	73	-.9683	115	.2297	
IA Tests of Basic Sk.	334	288	-.8212	156	121	-.9952	407	1.9317	1.96
MAT-Elementary	108	9	-1.4021	52	8	-1.3926	15	-.0260	
MAT-Intermediate	278	42	-.9897	180	34	-.6153	74	-2.0357	
SAT-Intermediate I	88	33	-.9679	106	59	-1.1642	90	1.0325	
SAT-Intermediate II	204	122	-1.0716	242	171	-1.0382	291	-.3140	1.96
Combined	2043	754	-.8960	1518	606	-.9906	1358	2.0099	1.96

programs in those states where the majority of pupils in this sample did not have kindergarten? Second, are there differences between pupils having and not having kindergarten which might account for a difference in achievement? Unfortunately, in this latter respect many differences might be attributed either to differences that existed before the child attended school or to differences (other than achievement) resulting from attendance at kindergarten or lack of it. A third issue which cannot be examined is the question of selection, i.e., the possible reasons for pupils having or not having kindergarten experience (other than availability of kindergarten) that also affected their achievement. For instance, a child may have come from a family that needed him at home, or from an unusually mobile family so it was inconvenient to place the child in kindergarten. The following two sections will attempt to examine some of these issues.

Comparison of Achievement Between Pupils Having and Not Having Kindergarten for Selected States

Eighteen states were selected for comparisons of pupils with and without kindergarten. These states were selected because they had significant numbers of pupils without kindergarten, in most instances more than 300 pupils. Despite the fact that approximately 80% of the pupils without kindergarten came from these states, the samples of the selected subpopulations with test scores were extremely small. This was especially true for LSES pupils.

Table 5.4 summarizes the comparison of means for 18 selected states which are detailed in Tables 5.5 through 5.22. The 18 selected states consisted of 11 southern states and 7 states from other regions.

Table 5.4 shows that the frequencies of various mean achievement test scores for groups with kindergarten are greater than mean achievement test scores for groups without kindergarten. Eighteen comparisons are made, 9 for LSES pupils and 9 for HSES pupils. Three comparisons are made for each grade, one for reading achievement tests, one for mathematics achievement tests and one for language achievement tests. Each comparison shows the number of states where the mean achievement test scores of children with kindergarten was greater than the mean achievement test scores of children without kindergarten, and vice versa.

A binomial test, assuming the probability of means with kindergarten being greater than means without kindergarten equals 2.5, was used to determine if the comparisons of frequencies were significantly different from what could be expected by chance for two types of situations: (1) the mean with kindergarten was greater than the mean without kindergarten, and (2) the mean without kindergarten was greater than the mean with kindergarten. For comparisons involving LSES pupils there was only one such instance. This involved sixth-grade language achievement tests where comparisons in 3 states favored those with kindergarten and comparisons in 13 states favored those without kindergarten. The cumulative comparisons were also examined for LSES groups. Fifty-eight comparisons favored groups with kindergarten over those without kindergarten, and 81 comparisons favored groups without kindergarten over groups with kindergarten. Using a normal approximation for the binomial test gave a z value of -2.04, significant at p less than or equal to .05.

TABLE 5.4

Summary of the Comparison of Mean Achievement Test Scores from Selected States for Those Students With and Without Kindergarten

			MWK>MNK	MNK>MWK	Total
G2 LSES:	Reading		7	8	15
	Mathematics		7	8	15
	Language		6	6	12
G4 LSES:	Reading		6	10	16
	Mathematics		8	9	17
	Language		9	7	16
G6 LSES:	Reading		5	11	16
	Mathematics		7	9	16
	Language		3	13	16
		Total	58	81	
G2 HSES:	Reading		15	3	18
	Mathematics		11	7	18
	Language		11	5	16
G4 HSES:	Reading		17	1	18
	Mathematics		15	3	18
	Language		16	2	18
G6 HSES:	Reading		18	0	18
	Mathematics		16	2	18
	Language		17	1	18
		Total	136	24	

Low: $Z = \frac{58-\frac{1}{2}-69.50}{5.89} = \frac{12.00}{5.89} = -2.04$

High: $Z = \frac{24-\frac{1}{2}-80}{6.32} = \frac{56.50}{6.32} = -12.74$

MWK = Mean value with kindergarten

MNK = Mean value no kindergarten

Using the sign test to compare group means involving HSES pupils, 7 were significant. These involved grade 2 reading achievement scores, grade 4 reading, mathematics and language achievement test scores, and grade 6 reading, mathematics and language achievement test scores. In each of these comparisons, the results favored groups with kindergarten. An overall comparison of HSES pupils revealed 136 instances where the mean of pupils with kindergarten was greater than the mean of those without kindergarten, and 24 comparisons where the mean of pupils without kindergarten was greater than the mean of those with kindergarten. A normal approximation of the binomial distribution gave a z value of -12.74. This is significant with p less than or equal to .001 (for all practical purposes, the probability of this occuring by chance is zero).

Tables 5.5 through 5.22 provide additional information and demonstrate the problem of missing data. Values of t have been reported for extremely small samples. This has been done to provide part of an overall picture. In most instances, t values are not intended to be considered individually. An examination of the tables for LSES pupils indicates relatively few instances where the value of t is statistically significant (p less than or equal to .005), and frequently in these instances the number of scores for one of the groups being compared is very small.

In comparing HSES pupils there were more than 30 comparisons where the value of t was not only significant but would also seem to be meaningful in terms of the number of test scores from both of the samples being compared. In all instances where there were statistically significant comparisons involving HSES pupils, these comparisons favored those who had kindergarten.

There are a number of alternative explanations which might explain this phenomena, none of which can be established through correlated data. However, it seems meaningful to discuss some of these alternatives. First, there is a selection factor of some type which works differently for the LSES and HSES pupils. Thus, the LSES without kindergarten experiences might have done more poorly even if they had kindergarten. Similarly, the HSES without kindergarten might have done better whether or not they had kindergarten. Such factors might include the need to be at home for various reasons, mobility of the family which prevented students from attending kindergarten, etc.

A second alternative that might have caused the effect would be the lack of existence of kindergarten programs in a community. It might be postulated that communities which could not afford school systems with kindergarten programs might have an overall lower socioeconomic population. If this were the case, HSES pupils who came from these communities might, because of cultural factors associated with the programs, be expected to do more poorly in school whether or not they had kindergarten. On the other hand, such communities might not be as negative a factor for LSES students and could conceivably be considered to have some advantages to their development.

The third alternative suggests that the actual differences occur because of kindergarten experiences. If this alternative is accepted, the data would seem to indicate that the value of kindergarten is greater for HSES pupils than for LSES pupils. This might be explained by the interaction of the curriculum with the development of the pupil. For the advantaged pupil the curriculum might be appropriate and support his development and self-concept, while for the disadvantaged the curriculum

TABLE 5.5

Reading Scores: Kindergarten versus No Kindergarten
Grade 2 Low SES for
18 Selected States*

	Kindergarten			No Kindergarten					
State	Sample Size	Number With Test Scores	Mean	Sample Size	Number With Test Scores	Mean	Degrees of Freedom	t	Critical t for p .05
1	30	0	.0000	67	6	-1.3058			
2	37	13	-.1565	66	26	-1.0916	37	3.7826	2.027
3	5	0	.0000	28	10	-1.4556			
4	80	24	-1.3989	135	36	-1.0820	58	-1.6122	2.002
5	84	29	-1.1842	51	9	-1.2620	36	.2080	2.029
6	273	36	-.8705	24	2	-.7655	36	-.2207	2.029
7	140	11	-.5292	165	28	-.6701	37	.4281	2.027
8	3	1	1.0800	22	12	-.8981	11	6.3703	2.201
9	89	6	-1.-235	54	8	-.5547	12	-.9818	2.179
10	68	24	-.8910	14	6	-.3473	28	-1.9039	2.048
11	19	7	-.4119	35	19	-.8128	24	1.0757	2.064
12	2	0	.0000	27	2	-2.0365			
13	767	119	-.4324	227	18	-.9799	135	2.5138	1.960
14	29	10	-.3508	95	12	-.6146	20	.6042	2.086
15	53	7	0.5993	49	9	-.0389	14	-1.2735	2.145
16	51	7	-.9637	55	9	-.7024	14	-.5529	2.145
17	33	5	-.7644	79	5	-.7078	8	-.0836	2.306
18	55	9	-.3899	39	5	-.3180	12	-.1291	2.179

*The 18 states include 11 southern states and 7 other states
Mean of Kindergarten greater than No Kindergarten--7 states
Mean of Kindergarten less than No Kindergarten--8 states

TABLE 5.6

Mathematics Scores: Kindergarten versus No Kindergarten
Grade 2 Low SES for
18 Selected States*

State	Kindergarten			No Kindergarten			Degrees of Freedom	t	Critical t for p .05
	Sample Size	Number With Test Scores	Mean	Sample Size	Number With Test Scores	Mean			
1	30	0	.0000	67	4	-.5255			
2	37	11	.2816	66	25	-1.2297	34	5.4435	2.034
3	5	0	.0000	28	10	-1.0412	8	3.5220	2.036
4	80	20	-1.3485	135	35	-1.0614	53	-1.1193	2.007
5	84	23	-1.0436	51	6	-.7670	27	-.5857	2.052
6	273	11	-.6479	24	1	-1.8810	10	5.6843	2.228
7	140	11	-.5192	165	26	-.5215	35	.0069	2.032
8	3	1	.4120	22	12	-.9477	11	4.3679	2.201
9	89	3	-.6879	54	7	-.0284	8	-.7332	2.306
10	68	23	-.8192	14	5	-.0820	26	-1.7621	2.056
11	19	7	-.2317	35	15	-.5774	20	.5407	2.086
12	2	0	.0000	27	1	-.7390			
13	767	26	.0991	227	0	.0000	24	.5659	2.064
14	29	8	-.8765	95	11	-.5592	17	-.5261	2.110
15	53	6	-.1557	49	9	.5050	13	-1.3063	2.160
16	51	3	-1.7227	55	1	.0000	2	-2.8743	4.303
17	33	4	-.5040	79	5	-.3764	7	-.2594	2.365
18	55	8	-.1035	39	2	-.8545	8	.4988	2.306

*The 18 states include 11 southern states and 7 other states
Mean of Kindergarten greater than No Kindergarten--7 states
Mean of Kindergarten less than No Kindergarten--8 states

TABLE 5.7

Language Scores: Kindergarten versus No Kindergarten
Grade 2 Low SES for
18 Selected States*

	Kindergarten			No Kindergarten					
State	Sample Size	Number With Test Scores	Mean	Sample Size	Number With Test Scores	Mean	Degrees of Freedom	t	Critical t for p .05
1	30	0	.0000	67	3	-.8343			
2	37	3	-.0843	66	11	-1.1061	12	3.7589	2.179
3	5	0	.0000	28	0	.0000			
4	80	7	-1.6397	135	11	-1.0248	16	-1.3105	2.120
5	84	20	-1.2014	51	4	-.8227	22	-.6097	2.074
6	273	4	-1.1132	24	1	-1.2810	3	.6542	3.182
7	140	9	-1.0344	165	11	-1.1535	18	.3765	2.101
8	3	0	.0000	22	7	-1.1570			
9	89	1	-2.0520	54	1	-.8410			
10	68	8	-.8257	14	1	-2.3220	7	4.2663	2.365
11	19	3	-.5807	35	6	-.5738	7	-.0141	2.365
12	2	0	.0000	27	0	-.0000			
13	767	9	-.1528	227	0	.0000	7	-.7283	2.365
14	29	5	-.2252	95	6	-.6892	9	.9560	2.262
15	53	4	.3800	49	2	.4530	4	-.0580	2.776
16	51	2	-.8225	55	1	.2270	1	-1.2760	12.706
17	33	3	-.4270	79	3	-1.3307	4	1.6533	2.776
18	55	6	.9823	39	0	.0000			

*The 18 states include 11 southern states and 7 other states
Mean of Kindergarten greater than No Kindergarten--6 states
Mean of Kindergarten less than No Kindergarten--6 states

TABLE 5.8

Reading Scores: Kindergarten versus No Kindergarten
Grade 4 Low SES for
18 Selected States*

	Kindergarten			No Kindergarten					
State	Sample Size	Number With Test Scores	Mean	Sample Size	Number With Test Scores	Mean	Degrees of Freedom	t	Critical t for p .05
1	24	9	-.3964	81	26	-.5372	33	.3681	2.036
2	59	26	-.9773	104	20	-.7806	44	-.7907	2.015
3	5	2	-1.5305	25	19	-1.0040	19	-.6445	2.093
4	59	35	-1.0865	155	80	-1.2117	113	.8383	1.982
5	48	30	-1.0594	45	22	-1.2121	50	.7814	2.011
6	247	122	-.8110	35	14	-1.0813	134	1.7258	1.960
7	133	94	-.7029	169	108	-.8736	200	1.4917	1.960
8	3	0	.0000	19	9	-.5264			
9	64	27	-1.1203	82	32	-.9974	57	-.7379	2.002
10	29	7	-1.2451	14	5	-1.1700	10	-.1541	2.228
11	12	11	-1.6085	32	21	-1.3359	31	-1.2827	2.040
12	0	0	.0000	36	5	-1.1578			
13	591	62	-.7143	173	7	-1.1730	67	1.1467	1.998
14	39	21	-1.2918	93	36	-1.0139	55	-1.3605	2.005
15	27	12	-1.0212	72	21	-.8810	31	-.6195	2.040
16	18	7	-1.0803	70	30	-.4796	35	-1.3163	2.032
17	24	16	-.9657	62	40	-.7003	54	-.8021	2.005
18	25	9	-.5768	41	17	-.5237	24	-.1361	2.064

*The 18 states include 11 southern states and 7 other states
Mean of Kindergarten greater than No Kindergarten--6 states
Mean of Kindergarten less than No Kindergarten--10 states

TABLE

Mathematics Scores: Kindergarten versus No Kindergarten
Grade 4 Low SES for
18 Selected States*

State	Kindergarten			No Kindergarten			Degrees of Freedom	t	Critical t for $p < .05$
	Sample Size	Number With Test Scores	Mean	Sample Size	Number With Test Scores	Mean			
1	24	8	-.5372	81	15	-.4885	21	-.1458	2.080
2	59	27	-1.0279	104	20	-.9242	45	-.4053	2.014
3	5	2	-1.4835	25	19	-.7642	19	-1.2047	2.093
4	59	33	-1.1368	155	76	-.9483	107	-1.2604	1.984
5	48	23	-1.2965	45	18	-1.3561	39	.2807	2.023
6	247	118	-.7525	35	13	-.9805	129	1.0632	1.960
7	133	98	-.3894	169	108	-.8676	204	3.8739	1.960
8	3	0	.0000	19	8	-.1870	6	.4033	2.447
9	64	23	-.9860	82	27	-1.0674	48	.3757	2.013
10	29	5	-1.4202	14	3	-1.4523	6	.0488	2.447
11	12	11	-1.1898	32	21	-1.2039	30	.0573	2.042
12	0	0	.0000	36	5	-.0540	3	.2975	3.182
13	591	49	-.5872	173	5	-1.1268	52	1.3418	2.008
14	39	21	-1.1354	93	34	-.8317	53	-1.2685	2.007
15	27	12	-.7986	72	20	-.7755	31	-.0762	2.040
16	18	7	-.8944	70	26	-.5065	31	-.9031	2.040
17	24	16	-1.0384	62	40	-.7468	54	-.9022	2.006
18	25	9	-.8603	41	15	-.6835	22	-.5819	2.074

* The 18 states include 11 southern states and 7 other states
Mean of Kindergarten greater than No Kindergarten - 8 states
Mean of Kindergarten less than No Kindergarten - 9 states

TABLE 5

Language Scores: Kindergarten versus No Kindergarten
Grade 4 Low SES for
18 Selected States*

State	Kindergarten			No Kindergarten			Degrees of Freedom	t	Critical t for $p < .05$
	Sample Size	Number With Test Scores	Mean	Sample Size	Number With Test Scores	Mean			
1	24	8	-.5830	81	15	-.7623	21	.5079	2.080
2	59	4	-.8265	104	13	-.6191	15	-.5149	2.131
3	5	2	-1.2350	25	18	-.6077	18	-1.7019	2.101
4	59	35	-1.1403	155	77	-1.0940	110	-.3015	1.983
5	48	30	-1.1146	45	21	-1.3222	49	1.1046	2.012
6	247	122	-.6358	35	13	-.9975	133	1.9831	1.960
7	133	98	-.4609	169	105	-.3639	201	3.6796	1.960
8	3	0	.0000	19	9	-.7890	7	2.2398	2.365
9	64	24	-1.0490	82	29	-.8799	51	-.6883	2.009
10	29	7	-1.5257	14	4	-1.5430	9	.0235	2.262
11	12	11	-1.1049	32	23	-1.2451	32	.6457	2.046
12	0	0	.0000	36	5	-.4254	3	1.4250	3.182
13	591	22	-.4728	173	3	-1.5053	23	3.2936	2.069
14	39	21	-.8343	93	34	-.8610	53	.1213	2.007
15	27	12	-1.2397	72	20	-.7113	31	-1.7392	2.040
16	18	5	-1.4588	70	25	-.7213	28	-2.5163	2.048
17	24	15	-.8941	62	40	-.7477	53	-.4321	2.007
18	25	9	-.2309	41	16	-.7754	23	1.6380	2.069

* The 18 states include 11 southern states and 7 other states
Mean of Kindergarten greater than No Kindergarten - 9 states
Mean of Kindergarten less than No Kindergarten - 7 states

TABLE 11

Reading Scores: Kindergarten versus No Kindergarten
Grade 6 Low SES for
18 Selected States*

State	Kindergarten			No Kindergarten			Degrees of Freedom	t	Critical t for $p < .05$
	Sample Size	Number With Test Scores	Mean	Sample Size	Number With Test Scores	Mean			
1	31	14	-1.7855	87	26	-1.4321	38	-1.6808	2.025
2	19	3	-.2143	135	56	-.7742	57	.5210	2.003
3	5	3	-1.3467	46	34	-.9923	35	-1.9749	2.032
4	58	23	-1.2162	167	94	-1.0483	115	-.8408	1.982
5	50	27	-1.2834	73	34	-.6811	59	-2.6895	2.001
6	258	36	-.9348	38	7	-1.0789	41	.3755	2.020
7	95	58	-.7705	151	81	-1.0677	137	2.2632	1.960
8	0	0	.0000	34	19	-.9757			
9	32	7	-.7179	80	42	-1.2660	47	1.9548	2.014
10	18	8	-1.2260	11	5	-1.0196	11	-.5004	2.201
11	5	3	-1.6027	42	31	-1.3048	32	-.6745	2.046
12	2	2	-.9435	30	7	-.9141	7	-.0423	2.365
13	398	45	-.8456	121	9	-.7260	52	-.4150	2.008
14	19	10	-1.2739	125	47	-1.0580	55	-.8435	2.004
15	26	9	-.6981	63	14	-.8797	21	.6906	2.080
16	2	1	-1.8810	66	32	-.6024	31	-9.0486	2.040
17	3	2	-2.1870	71	37	-1.0875	37	-5.2398	2.027
18	0	0	.0000	56	22	-.9851			

*The 18 states include 11 southern states and 7 other states.
Mean of Kindergarten greater than No Kindergarten--5 states
Mean of Kindergarten less than No Kindergarten--11 states

TABLE 12

Mathematics Scores: Kindergarten versus No Kindergarten
Grade 6 Low SES for
18 Selected States*

State	Kindergarten			No Kindergarten			Degrees of Freedom	t	Critical t for $p \leq .05$
	Sample Size	Number With Test Scores	Mean	Sample Size	Number With Test Scores	Mean			
1	31	14	-1.7501	87	28	-1.3637	40	-1.9003	2.021
2	19	3	-.4013	135	56	-.8365	57	.7313	2.003
3	5	3	-1.7793	46	34	-1.0061	35	-3.4438	2.032
4	58	23	-1.2376	167	90	-1.0210	111	-1.2594	1.983
5	50	27	-1.2926	73	34	-.5581	59	-3.5054	2.001
6	258	34	-.5674	38	8	-.7171	40	.3592	2.021
7	95	59	-.5625	151	76	-.8843	133	2.2447	1.960
8	0	0	.0000	34	19	-.9293	17	6.0164	2.110
9	32	7	-.9420	80	44	-1.2957	49	1.0268	2.012
10	18	7	-.9540	11	5	-1.0480	10	.1431	2.228
11	5	3	-1.2340	42	31	-1.2068	32	-.0592	2.038
12	2	2	.2590	30	7	-.9209	7	2.0511	2.365
13	398	38	-.9036	121	9	-.9444	45	.1472	2.016
14	19	8	-1.7322	125	43	-1.1216	49	-2.1973	2.012
15	26	9	-1.1042	63	14	-.8230	21	-.7725	2.080
16	2	1	-1.8810	66	32	-.4519	31	-8.9643	2.040
17	3	2	-1.9665	71	34	-1.1181	34	-4.5897	2.032
18	0	0	.0000	56	21	-.8888			

*The 18 states include 11 southern states and 7 other states
Mean of Kindergarten greater than No Kindergarten--7 states
Mean of Kindergarten less than No Kindergarten--9 states

TABLE 13

Language Scores: Kindergarten versus No Kindergarten
Grade 6 Low SES for
18 Selected States*

	Kindergarten			No Kindergarten					
State	Sample Size	Number With Test Scores	Mean	Sample Size	Number With Test Scores	Mean	Degrees of Freedom	t	Critical t for $p < .05$
1	31	14	-1.8651	87	28	-1.4185	40	-2.3361	2.021
2	19	1	-1.5550	135	42	-.8699	41	-4.3247	2.020
3	5	3	-1.4630	46	34	-.7299	35	-1.5479	2.030
4	58	22	-1.1847	167	90	-1.0307	110	-.8560	1.983
5	50	26	-1.5113	73	34	-.7171	58	-3.3353	2.002
6	258	25	-.9331	38	8	-.8739	31	-.1721	2.040
7	95	59	-.4897	151	77	-.9488	134	3.0924	1.960
8	0	0	.0000	34	19	-.8175			
9	32	7	-.8719	80	44	-1.1689	49	.8835	2.009
10	18	7	-1.2553	11	5	-1.1168	10	-.3044	2.228
11	5	3	-1.3500	42	30	-1.3322	31	-.0408	2.040
12	2	2	-1.1970	30	7	-.9129	7	-.4399	2.365
13	398	22	-.9304	121	4	-.9845	24	.1105	2.064
14	19	10	-1.6897	125	45	-1.1744	53	-2.0428	2.007
15	26	9	-.7626	63	14	-.6498	21	-.2881	2.080
16	2	1	-1.8810	66	24	-.7827	23	-6.2673	2.069
17	3	2	-2.0365	71	32	-1.1333	32	-2.7102	2.037
18	1021	213	.0000	1396	556	-1.1527			

*The 18 states include 11 southern states and 7 other states
Mean of Kindergarten greater than No Kindergarten--3 states
Mean of Kindergarten less than No Kindergarten--3 states

190

TABLE 5.14

Reading Scores: Kindergarten versus No Kindergarten
Grade 2 Higher SES for
17 Selected States*

State	Kindergarten			No Kindergarten			Degrees of Freedom	t	Critical t for $p < .05$
	Sample Size	Number With Test Scores	Mean	Sample Size	Number With Test Scores	Mean			
1	264	11	.3223	218	23	-.6448	32	2.2204	2.037
2	294	132	.2388	223	71	-.4683	201	4.7865	1.960
3	56	14	.2771	66	7	-.6516	19	2.7399	2.093
4	612	202	-.2682	364	111	-.4009	311	.9408	1.960
5	338	126	-.6714	127	36	-.5510	160	-.6033	1.960
6	999	206	.4896	30	6	.1920	210	1.0922	1.960
7	721	112	.6026	406	80	.1312	190	3.0179	1.960
8	76	38	.3531	169	80	.2777	116	.3471	1.981
9	290	46	-.4195	167	67	-.3253	111	-.4142	1.983
10	312	131	.0673	50	36	.1811	165	-.4601	1.960
11	97	53	-.1279	118	52	-.3236	103	.8159	1.986
12	58	7	.0743	137	29	-.8054	34	2.7259	2.032
13	1649	451	.1285	152	15	-.5824	464	4.4315	1.960
14	326	46	.4236	307	28	.2985	72	.5514	1.996
15	1039	204	.1832	93	26	-.0100	228	1.0033	1.960
16	797	216	.2305	171	55	-.1684	269	2.7169	1.960
17	142	29	-.0705	170	42	-.2835	197	.8589	1.960
18	200	56	.2593	180	59	.1707	113	.4748	1.981

*The 18 states include 11 southern states and 7 other states
Mean of Kindergarten greater than No Kindergarte--15 states
Mean of Kindergarten less than No Kindergarten--3 states

TABLE 5.16

Language Scores: Kindergarten versus No Kindergarten
Grade 2 Higher SES for
17 Selected States*

State	Kindergarten			No Kindergarten			Degrees of Freedom	t	Critical t for $p \leq .05$
	Sample Size	Number With Test Scores	Mean	Sample Size	Number With Test Scores	Mean			
1	264	2	.1585	218	4	-.4120	4	.7286	2.776
2	294	24	.6214	223	22	-.0220	44	2.0440	2.015
3	56	5	.4250	66	0	.0000	3	.9121	3.182
4	612	88	-.1991	364	54	-.6362	140	2.2540	1.960
5	338	76	-.5271	127	15	-.4853	89	-.1384	1.987
6	999	34	.6679	30	2	.8975	34	-1.2818	2.032
7	721	45	.3992	406	35	.0932	78	1.2035	1.991
8	76	11	.7090	169	55	.1157	64	1.8894	1.999
9	290	12	-.1187	167	6	-.6515	16	.9409	2.120
10	312	17	.0151	50	2	-.9635	17	1.1228	2.110
11	97	26	-.6143	118	18	-.4443	42	-.5163	2.019
12	58	0	.0000	137	7	-.6247			
13	1649	14	.4272	152	1	-.2010	13	3.1509	2.160
14	326	12	.4783	307	6	1.0165	16	-1.2683	2.120
15	1039	49	.2773	93	7	-.3106	54	1.4068	2.006
16	797	67	.2106	171	26	.3665	91	-.5826	1.989
17	142	1	1.6450	170	9	-.0703	8	3.8579	2.306
18	200	9	.8114	180	21	.6174	28	.5531	2.048

*The 18 states include 11 southern states and 7 other states
Mean of Kindergarten greater than No Kindergarten--11 states
Mean of Kindergarten less than No Kindergarten--5 states

TABLE 5.17
Reading Scores: Kindergarten versus No Kindergarten
Grade 4 Higher SES for
18 Selected States*

State	Kindergarten			No Kindergarten			Degrees of Freedom	t	Critical t for $p < .05$
	Sample Size	Number With Test Scores	Mean	Sample Size	Number With Test Scores	Mean			
1	248	120	-.0171	222	82	-.0719	220	.3663	1.960
2	239	107	.1690	272	111	-.4472	216	4.9466	1.960
3	59	32	-.0345	79	44	-.2137	74	.8204	1.992
4	610	335	-.3481	323	172	-.5039	505	1.5969	1.960
5	324	166	-.4180	145	67	-.4588	231	.3119	1.960
6	912	443	.0393	62	22	-.0686	513	.5593	1.960
7	551	343	.0330	389	238	-.1796	579	2.7029	1.960
8	57	21	.5583	163	78	-.0511	97	2.8099	1.985
9	258	71	-.3976	176	69	-.2989	138	-.5557	1.960
10	297	148	-.1084	63	51	-.1553	197	.3111	1.960
11	57	40	-.0731	89	64	-.4267	102	1.5887	1.984
12	56	6	.5098	114	25	-.5554	29	2.3460	2.045
13	1499	371	.0815	163	15	-.5151	384	2.1883	1.960
14	259	155	.1186	302	144	-.1620	297	2.4342	1.960
15	172	58	.2056	207	71	-.1773	127	2.2527	1.960
16	939	442	.1471	118	55	-.0492	495	1.2767	1.960
17	682	350	.0241	196	111	-.1321	459	1.6454	1.960
18	114	57	.0465	174	71	-.2375	126	1.5882	1.960

*The 18 states include 11 southern states and 7 other states
Mean of Kindergarten greater than No Kindergarten--17 states
Mean of Kindergarten less than No Kindergarten--1 state

TABLE 5.18

Mathematics Scores: Kindergarten versus No Kindergarten
Grade 4 Higher SES for
18 Selected States*

	Kindergarten			No Kindergarten					
State	Sample Size	Number With Test Scores	Mean	Sample Size	Number With Test Scores	Mean	Degrees of Freedom	t	Critical t for $p < .05$
1	248	121	-.0302	222	79	.1168	200	-.9522	1.960
2	239	107	.1173	272	108	-.1664	213	2.1843	1.960
3	59	31	.1224	79	44	-.1328	73	1.1728	1.993
4	610	325	-.3280	323	162	-.3742	485	.4660	1.960
5	324	145	-.4661	145	60	-.4194	203	-.3012	1.960
6	912	445	.1604	62	22	.1160	465	.2466	1.960
7	551	347	.1265	389	235	-.0694	580	2.2371	1.960
8	57	21	.4062	163	75	-.0855	94	2.1943	1.986
9	258	63	-.5540	176	69	-.1537	130	-2.3653	1.960
10	297	144	-.0597	63	51	-.1905	193	.7992	1.960
11	57	35	.1405	89	58	-.3410	91	2.4373	1.987
12	56	6	.2235	114	18	-.3453	22	1.6687	2.074
13	1499	350	.1335	163	19	-.6672	367	3.7003	1.960
14	259	153	-.0241	302	142	-.1671	293	1.2868	1.960
15	172	58	.1453	207	71	-.0115	127	.8314	1.960
16	939	403	.1881	118	45	-.3490	446	3.1787	1.960
17	682	347	.2221	196	91	-.1000	436	2.4699	1.960
18	114	56	.1885	174	71	-.1990	125	2.1596	1.960

*The 18 states include 11 southern states and 7 other states
Mean of Kindergarten greater than No Kindergarten--15 states
Mean of Kindergarten less than No Kindergarten--3 states

TABLE 5.19

Language Scores: Kindergarten versus No Kindergarten
Grade 4 Higher SES for
18 Selected States*

State	Kindergarten Sample Size	Kindergarten Number With Test Scores	Kindergarten Mean	No Kindergarten Sample Size	No Kindergarten Number With Test Scores	No Kindergarten Mean	Degrees of Freedom	t	Critical t for $p < .05$
1	248	120	.0225	222	80	.1399	198	-.7063	1.960
2	239	58	.3633	272	92	-.3307	148	4.5809	1.960
3	59	32	-.0582	79	42	-.1532	72	.4309	1.996
4	610	324	-.3687	323	166	-.5622	488	2.0543	1.960
5	324	165	-.4728	145	66	-.4955	229	.1675	1.960
6	912	449	.1566	62	22	-.1696	469	1.7478	1.960
7	551	344	.1741	389	238	-.1757	580	4.2519	1.960
8	57	21	.0409	163	76	-.0350	95	.3125	1.988
9	258	63	-.3895	176	64	-.1196	125	-1.4497	1.960
10	297	145	-.0597	63	50	-.1905	193	.4741	1.960
11	57	34	.0545	89	58	-.5512	90	2.5962	1.987
12	56	6	.0732	114	18	-.1551	22	.5667	2.074
13	1499	274	.2200	163	9	-.4034	281	1.8828	1.960
14	259	153	.2525	302	141	.0860	293	1.4440	1.960
15	172	57	.1685	207	66	.1064	121	.3375	1.960
16	939	405	.1260	118	42	-.2110	445	2.4242	1.960
17	682	343	.0581	196	93	-.2321	434	2.5164	1.960
18	114	57	.1074	174	71	-.3255	126	2.4392	1.960

*The 18 states include 11 southern states and 7 other states
Mean of Kindergarten greater than No Kindergarten--16 states
Mean of Kindergarten less than No Kindergarten--2 states

TABLE 5.10

Reading Scores: Kindergarten versus No Kindergarten
Grade 6 Higher SES for
18 Selected States*

State	Kindergarten Sample Size	Kindergarten Number With Test Scores	Kindergarten Mean	No Kindergarten Sample Size	No Kindergarten Number With Test Scores	No Kindergarten Mean	Degrees of Freedom	t	Critical t for $p < .05$
1	223	130	-.3972	282	133	-.5330	261	1.0017	1.960
2	178	90	.0454	299	131	-.3056	219	2.5991	1.960
3	44	30	.3883	76	56	-.3338	84	3.2599	1.989
4	478	236	-.2274	432	242	-.5818	476	3.7638	1.960
5	273	124	-.4443	152	51	-.6882	173	1.5346	1.960
6	741	241	.2498	59	23	-.0096	262	1.1031	1.960
7	455	221	.0389	445	230	-.1848	249	2.3455	1.960
8	31	18	-.0513	203	143	-.1874	159	.8826	1.960
9	195	44	-.2788	183	91	-.6537	133	1.7844	1.960
10	205	117	.1233	77	50	-.0347	165	.9939	1.960
11	69	57	.3275	128	96	-.4902	151	4.6431	1.960
12	29	5	.3282	106	17	-.3162	20	1.0810	2.086
13	1256	404	.1036	170	27	-.1884	429	1.1559	1.960
14	198	114	.3231	396	202	-.2955	314	5.3560	1.960
15	168	48	.1454	267	84	-.1199	130	1.4358	1.960
16	912	431	.1303	123	48	.0033	477	.9454	1.960
17	587	302	-.0394	195	101	-.3613	401	2.8179	1.960
18	83	43	.0249	193	121	-.3078	162	1.8037	1.960

*The 18 states include 11 southern states and 7 other states
Mean of Kindergarten greater than No Kindergarten--18 states
Mean of Kindergarten less than No Kindergarten--0 states

TABLE 5.21
Mathematics Scores: Kindergarten versus No Kindergarten
Grade 6 Higher SES for
18 Selected States*

State	Kindergarten			No Kindergarten			Degrees of Freedom	t	Critical t for $p \leq .05$
	Sample Size	Number With Test Scores	Mean	Sample Size	Number With Test Scores	Mean			
1	223	130	-.4500	282	128	-.5440	256	.7181	1.960
2	178	83	-.0043	299	126	-.2963	207	2.3235	1.960
3	44	30	.2042	76	57	-.4205	85	3.0298	1.989
4	478	232	-.3099	432	238	-.5742	468	2.7324	1.960
5	273	125	-.6734	152	52	-.6933	175	.1134	1.960
6	741	239	.1884	59	23	-.0504	260	1.1269	1.960
7	455	219	.0468	445	229	-.1422	446	2.0697	1.960
8	31	18	-.0038	203	140	-.2865	156	1.4338	1.960
9	195	41	-.2079	183	89	-.6861	128	2.0597	1.960
10	205	119	-.0994	77	50	-.0355	167	-.3956	1.960
11	69	56	-.0055	128	95	-.6333	149	3.6370	1.960
12	29	5	.1274	106	16	-.4011	19	.9962	2.093
13	1256	394	.1727	170	28	-.4090	420	2.8785	1.960
14	198	112	.2242	396	196	-.3899	306	4.8892	1.960
15	168	46	-.0693	267	82	-.0202	126	-.2419	1.960
16	912	421	.0868	123	47	.0680	466	.1355	1.960
17	587	290	-.0852	195	101	-.2273	389	1.1922	1.960
18	83	43	-.0344	193	117	-.3435	158	1.9267	1.960

*The 18 states include 11 southern states and 7 other states
Mean of Kindergarten greater than No Kindergarten--16 states
Mean of Kindergarten less than No Kindergarten--2 states

TABLE 5.22

Language Scores: Kindergarten versus No Kindergarten
Grade 6 Higher SES for
18 Selected States*

State	Kindergarten Sample Size	Kindergarten Number With Test Scores	Kindergarten Mean	No Kindergarten Sample Size	No Kindergarten Number With Test Scores	No Kindergarten Mean	Degrees of Freedom	t	Critical t for $p \leq .05$
1	223	130	-.3844	282	132	-.5716	260	1.3963	1.960
2	178	50	.1195	299	104	-.2101	152	1.7349	1.960
3	44	30	.4079	76	57	-.2479	85	2.9310	1.989
4	478	233	-.3212	432	237	-.5350	468	2.2089	1.960
5	273	122	-.5749	152	50	-.6267	170	.2889	1.960
6	741	227	.2361	59	20	-.2722	245	2.2691	1.960
7	455	224	.1110	445	230	-.1331	252	2.6004	1.960
8	31	19	-.2294	203	140	-.2338	157	.0250	1.960
9	195	41	-.1736	183	85	-.5803	134	2.0016	1.960
10	205	118	.1240	77	50	.0063	166	.7070	1.960
11	69	55	.2455	128	98	-.5696	181	3.9036	1.960
12	29	5	.3154	106	16	-.3948	19	1.1719	2.093
13	1256	285	.3549	170	17	.1851	300	.5658	1.960
14	198	112	.4916	396	197	-.2443	307	6.2467	1.960
15	168	48	.0501	267	84	-.0730	130	.6552	1.960
16	912	369	.1452	123	44	.2003	411	-.4532	1.960
17	587	299	-.0088	195	102	-.1269	399	1.0111	1.960
18	83	43	.0177	193	118	-.1994	159	1.0715	1.960

*The 18 states include 11 southern states and 7 other states
Mean of Kindergarten greater than No Kindergarten--7 states
Mean of Kindergarten less than No Kindergarten--1 state

might be too difficult and might contribute to a negative self-concept, with the feeling that it is difficult to succeed in school.

In summary, there appears to be little evidence in this data which might support the value of kindergarten for the disadvantaged, at least insofar as present curriculums are concerned. On the other hand, the data would seem to suggest that kindergarten may have some advantage for pupils that are not socioeconomically disadvantaged. However, all effects might be traced to factors other than kindergarten.

Profile Analysis of Nominal and Ordinal Data Comparing Pupils With and Without Kindergarten

The comparisons presented in this section should be examined with considerable caution. No attempts have been made to compare the subpopulations for separate states. Thus, the comparisons represent the majority of children without kindergarten coming from approximately 18 states, and pupils with kindergarten coming from all states reporting. To this extent the differences described may be influenced by geographic factors. Because of the limited samples from many of the states, no attempt has been made to factor out the extent to which this may have been the case.

The picture concerning responses to nominal and ordinal items for pupils with and without kindergarten is somewhat mixed. Cattell's pattern similarity index for the most part shows that the profiles of LSES pupils are not significantly similar or dissimilar. The one exception comes from teacher observations concerning services rendered or services needed. Similarly, the analysis for HSES pupils shows similar profiles at the .01 level concerning teacher observations of services needed or obtained.

However, teacher judgments yield significant dissimilarities in the profile for grade 2 at the .01 level, and for grade 4 at the .05 level. These two types of profile information are described in Chapters 3 and 4.

In no instance were there significant similarities or dissimilarities of demographic profiles comparing HSES pupils with and without kindergarten or in similar comparisons for LSES pupils. Without question, there could be alternative hypotheses concerning the factors affecting academic achievement aside from those related to having or not having kindergarten.

A comparison of responses to selected items by different subpopulations.

Tables 5.23 through 5.28 show the results of chi-square tests on specific items. Cautious interpretation is of particular importance for these comparisons because of the sensitivity of chi-square for large samples. As mentioned in Chapter 2, the expected contribution of a cell for a fixed percentage difference in a population is directly related to the expected value. In other words, if sampling from two different populations is made, and there is a real difference between these populations, it can be expected that the value for chi-square will be ten times as large for samples that are ten times as large. Thus, the chi-square test becomes extremely sensitive for large samples, and the value of chi-square should not be taken as a measure of relative difference between the two groups unless this characteristic is understood. Furthermore, comparing values for samples of different sizes can be dangerous if this is not taken into consideration.

In the following section when the statement is made that there are significant differences and no mention is made of levels of significance, all differences are at the .05 level or smaller.

TABLE 5.23

Grade 2 Low Socioeconomic Status
3094 Kindergarten Versus 1317 No Kindergarten

Item	Description	Chi-Sq.	Deg. Fr.	Sign.-Level
7.37	No. of Schools	5.29	3	
9.40	Attitude vs. Educ. Expect.	196.50	5	$p < .005$
10.41	Ability vs. Educ. Expect.	137.78	5	$p < .005$
11.52	Social Immaturity	1.30	1	
11.53	Emotional Problems	8.51	1	$p < .005$
11.54	Anti-social Behavior	0.23	1	
11.55	Malnutrition	47.46	1	$p < .005$
11.56	Family Instability	15.20	1	$p < .005$
12.63	Potential Dropout	42.98	1	$p < .005$
12.66	Neglected or Delinq. Pupils	3.78	1	
13.69	Race	43.65	5	$p < .005$
19.75	Head of Household	27.89	8	$p < .005$
20.76	Welfare	21.44	3	$p < .005$
20.77	Employment Status	22.14	4	$p < .005$
22.80	Mother Employment	15.84	6	$p < .025$
26.89	Educ. Level Head	116.52	6	$p < .005$
26.90	Educ. Level Mother	110.28	6	$p < .005$
39.199	Diagnostic Assessment	53.63	4	$p < .005$
39.200	Case Conference	50.21	4	$p < .005$
39.201	Indiv. Counseling	27.89	4	$p < .005$
39.202	Group Counseling	24.37	4	$p < .005$
39.203	Psychol. Treatment	57.43	4	$p < .005$
39.204	Home Visitation	46.95	4	$p < .005$
39.205	Remedial Program	56.98	4	$p < .005$
39.206	Ref. to Specialist	43.82	4	$p < .005$
39.207	Other	44.28	4	$p < .005$
42.235	Diff. Task Completion	13.58	1	$p < .005$

TABLE 5.24

Grade 4 Low Socioeconomic Status
2602 Kindergarten Versus 1419 No Kindergarten

Item	Description	Chi-Sq.	Deg. Fr.	Sign.-Level
7.37	No. of Schools	10.54	5	
9.40	Attitude vs. Educ. Expect.	134.63	5	$p<.005$
10.41	Ability vs. Educ. Expect.	158.95	5	$p<.005$
11.52	Social Immaturity	7.05	1	$p<.01$
11.53	Emotional Problems	16.30	1	$p<.005$
11.54	Anti-social Behavior	.49	1	
11.55	Malnutrition	33.85	1	$p<.005$
11.56	Family Instability	2.62	1	
12.63	Potential Dropout	34.04	1	$p<.005$
12.66	Neglected or Delinq. Pupils	7.29	1	$p<.01$
13.69	Race	49.95	4	$p<.005$
19.75	Head of Household	19.06	7	$p<.01$
20.76	Welfare	18.78	3	$p<.005$
20.77	Employment Status	52.55	4	$p<.005$
22.80	Mother Employment	24.57	6	$p<.005$
26.89	Educ. Level Head	163.81	6	$p<.005$
26.90	Educ. Level Mother	149.13	6	$p<.005$
39.199	Diagnostic Assessment	58.65	4	$p<.005$
39.200	Case Conference	53.45	4	$p<.005$
39.201	Indiv. Counseling	21.80	4	$p<.005$
39.202	Group Counseling	16.19	4	$p<.005$
39.203	Psychol. Treatment	59.55	4	$p<.005$
39.204	Home Visitation	27.11	4	$p<.005$
39.205	Remedial Program	33.17	4	$p<.005$
39.206	Ref. to Specialist	35.31	4	$p<.005$
39.207	Other	30.62	4	$p<.005$
42.235	Diff. Task Completion	3.28	4	$p<.005$

TABLE 5.25

Grade 6 Low Socioeconomic Status
2043 Kindergarten Versus 1518 No Kindergarten

Item	Description	Chi-Sq.	Deg. Fr.	Sign.-Level
7.37	No. of Schools	17.18	6	$p < .01$
9.40	Attitude vs. Educ. Expect.	60.71	4	$p < .005$
10.41	Ability vs. Educ. Expect.	79.73	4	$p < .005$
11.52	Social Immaturity	16.08	1	$p < .005$
11.53	Emotional Problems	4.21	1	$p < .005$
11.54	Anti-social Behavior	4.89	1	$p < .05$
11.55	Malnutrition	6.24	1	$p < .05$
11.56	Family Instability	.19	1	
12.63	Potential Dropout	20.65	1	$p < .005$
12.66	Neglected or Delinq. Pupils	.79	1	
13.69	Race	50.38	4	$p < .005$
19.75	Head of Household	35.98	8	$p < .005$
20.76	Welfare	30.48	3	$p < .005$
20.77	Employment Status	58.20	4	$p < .005$
22.80	Mother Employment	37.57	6	$p < .005$
26.89	Educ. Level Head	131.25	6	$p < .005$
26.90	Educ. Level Mother	93.54	7	$p < .005$
39.199	Diagnostic Assessment	29.43	4	$p < .005$
39.200	Case Conference	25.09	4	$p < .005$
39.201	Indiv. Counseling	14.22	4	$p < .01$
39.202	Group Counseling	17.98	4	$p < .005$
39.203	Psychol. Treatment	75.72	4	$p < .005$
39.204	Home Visitation	26.40	4	$p < .005$
39.205	Remedial Program	65.61	4	$p < .005$
39.206	Ref. to Specialist	45.08	4	$p < .005$
39.207	Other	28.77	4	$p < .005$
42.235	Diff. Task Completion	9.68	4	$p < .005$

TABLE 5.26

Grade 2 High Socioeconomic Status
15262 Kindergarten Versus 3660 No Kindergarten

Item	Description	Chi-Sq.	Deg. Fr.	Sign.-Level
7.37	No. of Schools	3.33	4	$p < .005$
9.40	Attitude vs. Educ. Expect.	528.64	5	$p < .005$
10.41	Ability vs. Educ. Expect.	414.68	5	$p < .005$
11.52	Social Immaturity	1.20	1	
11.53	Emotional Problems	3.28	1	
11.54	Anti-social Behavior	.09	1	
11.55	Malnutrition	9.52	1	$p < .005$
11.56	Family Instability	38.27	1	$p < .005$
12.63	Potential Dropout	53.32	1	$p < .005$
12.66	Neglected or Delinq. Pupils	7.08	1	$p < .01$
13.69	Race	197.44	5	$p < .005$
19.75	Head of Household	27.86	8	$p < .005$
20.76	Welfare	34.85	3	$p < .005$
20.77	Employment Status	142.98	4	$p < .005$
22.80	Mother Employment	44.79	6	$p < .005$
26.89	Educ. Level Head	849.31	8	$p < .005$
26.90	Educ. Level Mother	767.37	8	$p < .005$
39.199	Diagnostic Assessment	307.17	4	$p < .005$
39.200	Case Conference	185.71	4	$p < .005$
39.201	Indiv. Counseling	134.11	4	$p < .005$
39.202	Group Counseling	125.06	4	$p < .005$
39.203	Psychol. Treatment	204.34	4	$p < .005$
39.204	Home Visitation	218.56	4	$p < .005$
39.205	Remedial Program	271.65	4	$p < .005$
39.206	Ref. to Specialist	233.23	4	$p < .005$
39.207	Other	195.55	4	$p < .005$
42.235	Diff. Task Completion	9.53	4	$p < .05$

TABLE 5.27

Grade 4 High Socioeconomic Status
13718 Kindergarten Versus 3872 No Kindergarten

Item	Description	Chi-Sq.	Deg. Fr.	Sign.-Level
7.37	No. of Schools	7.78	5	
9.40	Attitude vs. Educ. Expect.	513.36	5	$p < .005$
10.41	Ability vs. Educ. Expect.	344.05	5	$p < .005$
11.52	Social Immaturity	6.53	1	$p < .025$
11.53	Emotional Problems	.56	1	
11.54	Anti-social Behavior	1.15	1	
11.55	Malnutrition	14.40	1	$p < .005$
11.56	Family Instability	31.18	1	$p < .005$
12.63	Potential Dropout	81.11	1	$p < .005$
12.66	Neglected or Delinq. Pupils	8.53	1	$p < .005$
13.69	Race	122.98	5	$p < .005$
19.75	Head of Household	36.92	8	$p < .005$
20.76	Welfare	31.08	3	$p < .005$
20.77	Employment Status	89.65	4	$p < .005$
22.80	Mother Employment	30.11	6	$p < .005$
26.89	Educ. Level Head	854.45	8	$p < .005$
26.90	Educ. Level Mother	777.63	8	$p < .005$
39.199	Diagnostic Assessment	442.38	4	$p < .005$
39.200	Case Conference	196.59	4	$p < .005$
39.201	Indiv. Counseling	163.74	4	$p < .005$
39.202	Group Counseling	192.73	4	$p < .005$
39.203	Psychol. Treatment	219.56	4	$p < .005$
39.204	Home Visitation	190.40	4	$p < .005$
39.205	Remedial Program	280.97	4	$p < .005$
39.206	Ref. to Specialist	212.62	4	$p < .005$
39.207	Other	152.27	4	$p < .005$
42.235	Diff. Task Completion	24.64	4	$p < .005$

TABLE 5.28

Grade 6 High Socioeconomic Status
11702 With Kindergarten Versus 4527 No Kindergarten

Item	Description	Chi-Sq.	Deg. Fr.	Sign.-Level
7.37	No. of Schools	4.46	6	
9.40	Attitude vs. Educ. Expect.	383.91	5	$p<.005$
10.41	Ability vs. Educ. Expect.	316.05	5	$p<.005$
11.52	Social Immaturity	7.23	1	$p<.005$
11.53	Emotional Problems	3.60	1	
11.54	Anti-social Behavior	.05	1	
11.55	Malnutrition	11.58	1	$p<.005$
11.56	Family Instability	13.02	1	$p<.005$
12.63	Potential Dropout	60.09	1	$p<.005$
12.66	Neglected or Delinq. Pupils	2.13	1	
13.69	Race	118.43	5	$p<.005$
19.75	Head of Household	32.42	8	$p<.005$
20.76	Welfare	40.05	3	$p<.005$
20.77	Employment Status	72.67	4	$p<.005$
22.80	Mother Employment	43.22	6	$p<.005$
26.89	Educ. Level Head	954.01	8	$p<.005$
26.90	Educ. Level Mother	841.89	8	$p<.005$
39.199	Diagnostic Assessment	365.74	4	$p<.005$
39.200	Case Conference	192.27	4	$p<.005$
39.201	Indiv. Counseling	96.74	4	$p<.005$
39.202	Group Counseling	114.70	4	$p<.005$
39.203	Psychol. Treatment	255.74	4	$p<.005$
39.204	Home Visitation	169.83	4	$p<.005$
39.205	Remedial Program	298.27	4	$p<.005$
39.206	Ref. to Specialist	189.27	4	$p<.005$
39.207	Other	186.48	4	$p<.005$
42.235	Diff. Task Completion	52.71	4	$p<.005$

Number of schools attended. There was only one comparison made of pupils with and without kindergarten where there was a significant difference in the number of schools attended. This was for sixth-grade LSES pupils. In this case those without kindergarten had attended fewer schools as a whole than those with kindergarten.

Teacher expectations of educational attainment compared with present estimates of pupil attitude. In all instances the comparison made between those with kindergarten and those without kindergarten showed a significant difference at the .005 level. In all comparisons, the factor contributing to the significant difference was the expectation of teachers that those who had kindergarten as a group would complete more formal education than those who did not have kindergarten. This was true regardless of the grade or the socioeconomic status of the groups being compared.

Teacher expectations of educational attainment compared with present estimates of pupil ability. There were significant differences at the .005 level for all groups except for grade 4 LSES, which was significant at .01, and grade 4 HSES, which was significant at .025. In all instances, the factor contributing to these differerences was the teacher judgments of pupils' attitudes and the expectation that groups with kindergarten would complete more formal education than those without kindergarten. This was true regardless of the grade or socioeconomic status of the groups being compared.

Teacher judgments of social immaturity. There were significant differences at the .05 level or less for all groups except those in grade 2 on social immaturity items. In every instance where there was a significant difference, it occurred because a greater proportion of students with kindergarten than without were marked as socially immature. While the

differences were significant for the HSES group, the absolute variation was less than 2%, whereas with the LSES group the variation for sixth and fourth graders ranged from about 3 to 5%.

Teacher judgments concerning emotional problems. There were no significant differences in the HSES groups related to the frequency of emotional problems. With the LSES pupils there were significant differences at the .05 level or less for all comparisons. In each instance, the significant difference occurred because proportionately more children with kindergarten had emotional problems than those without kindergarten.

Teacher judgments of antisocial behavior. In only one instance there was a significant difference at the .05 level related to antisocial behavior. This was for sixth-grade LSES pupils. In this instance there was a slightly greater incidence of antisocial behavior for those who had kindergarten than for those who did not have kindergarten.

Teacher judgments concerning malnutrition. There were significant differences for all comparisons related to malnutrition. However, the incidence of malnutrition for the HSES groups was so low that the relatively small percentage of variation on relatively small values for the number marked as having malnutrition made an unusually sensitive test. Proportionately, the variation was less than 1%. The greatest proportional difference occurred for second-grade LSES pupils where the incidence of malnutrition for those with kindergarten was approximately 13% while for those without kindergarten it was about 7%. In grade 4, LSES children without kindergarten had an incidence of reported malnutrition of 3.1% compared to 1.8% for those with kindergarten. As a whole, the differences are relatively small and show no distinct pattern.

Teacher judgments concerning family instability. There were significant differences at the .05 level or less related to family instability for grade 2 LSES pupils and grades 2, 4 and 6 HSES pupils. In all instances, the proportion of pupils without kindergarten who came from homes with a persistent problem of family instability was greater than the proportion of pupils who had kindergarten.

Teacher judgments concerning potential dropout. In all comparisons of subgroups with and without kindergarten, there was a significant difference at the .005 level or less in the teachers' classification of pupils as potential dropouts. In all instances, groups without kindergarten were indicated to have a greater proportion of potential dropouts than the the corresponding subgroup with kindergarten.

Teacher judgments concerning neglected or delinquent pupils. For pupils classified as neglected or delinquent there were significant differences at the .01 level for fourth-grade LSES and for second-grade HSES, and at the .05 level for fourth-grade HSES pupils. In all comparisons that were significant, the differences occurred because more pupils were categorized as neglected or delinquent from groups without kindergarten than from groups with kindergarten. Again, a note of caution should be included. The chi-square test was sufficiently sensitive with the particular data used (grade 2) to distinguish as significant these differences for the HSES pupils which amounted to differences in incident rate of 15 per thousand compared to 10 per thousand. This occurred because of the extremely large sample sizes (15262 vs. 3660) on which comparisons were made. Thus, while the differences are statistically significant, the question could be raised as to whether they are meaningfully different.

Race. In all comparisons of subpopulations with or without kindergarten, race was indicated as a factor that contributed to significant differences. Major factors contributing to these differences were proportionately more Negroes with kindergarten and proportionately fewer Chicanos and others (most likely Caucasians) with kindergarten than were expected (expected as posed on the expected value for chi-square). One exception from this general picture was with sixth-grade HSES pupils where there were slightly fewer Negroes than expected, considerably fewer Chicanos than expected, and somewhat more whites and others than expected with kindergarten.

Relationship of the head of household to the pupil. There were significant differences in all comparisons on the item giving information concerning the head of household relationship to the pupil. For the LSES group, the most meaningful differences resulted from pupils with kindergarten having proportionately fewer fathers and proportionately more mothers as the head of household than expected. This generalization was reversed for HSES group comparisons. While there were other relationships, such as uncles, aunts and grandparents that contributed to the cell value, the numbers of pupils from families having a head of household with these relationships were so small that they are not as meaningful as the mother or father factors.

Family receiving welfare. While there were significant differences between groups of children with and without kindergarten on factors related to whether or not the families received welfare, these differences were a result of error terms as much as the welfare status. Also, there was no meaningful pattern across grades or socioeconomic status, nor was the level of proportional difference one that would be considered meaningful.

Employment status of head of household. There were significant differences between families of pupils with and without kindergarten concerning employment status. For the LSES groups compared, pupils without kindergarten came from schools where more was known about the employment status of the head of household. This resulted in responses indicating that proportionately more came from homes where the head of household was regularly employed, seasonally employed, or chronically unemployed, and proportionately fewer from households where the school did not know about employment. Thus, the responses may relate more to the type of records kept in the school than to the true picture of employment status. For HSES pupils, there appeared to be proportionately more with kindergarten experiences who came from homes where the head of household was regularly employed, and proportionately fewer than expected from homes where the head of household was seasonally employed or chronically unemployed.

Mother employed. There were significant differences in all comparisons related to the employment of the mother. The greatest variation appears to come from more mothers unemployed in groups without kindergarten, and proportionately more cases where there was no knowledge concerning the mother of pupils with kindergarten. Thus, there is some question concerning whether the data relates to the pupil's family characteristics or to the record-keeping characteristics of schools.

Estimated educational level of head of household. In all comparisons of subpopulations with and without kindergarten, there were significant differences in the estimated educational level of the head of household. In all instances, the major differences occurred because proportionately more heads of household for pupils without kindergarten were categorized

as (1) having little or no education, (2) probably completed grade school, and (3) probably had some high school. On the other hand, the heads of household for pupils with kindergarten were classified as proportionately more likely to have (4) probably completed high school, (5) probably had some post-high school training but not college, etc. In general, the heads of household for those without kindergarten were skewed toward being categorized as having less education, while those heads of household from pupils with kindergarten were skewed toward having more education. For this item, not only are there statistically significant levels, but the differences are of a magnitude that appear to be meaningful. A question which must be considered is whether or not these are the results of true differences or of what teachers think the differences are.

Estimated educational level of mother. In all comparisons there were significant differences between the estimated level of the mother's education for pupils with kindergarten and for pupils without kindergarten. In all comparisons these differences were the result of a skewing which showed a general lower level of education for mothers of pupils without kindergarten and a generally higher level of education for mothers of pupils with kindergarten. Again, there exist problems as to whether the fact that the child did or did not have kindergarten affected the estimate of the teacher, or whether the educational level was indicative of the communities where kindergarten programs were or were not available.

Special services received, needed, not needed, and not available. This item on the questionnaire dealt with a variety of special services for which a teacher could indicate that the pupil received the service, needed the service, did not need the service, or that the service was

not available. The ambiguities in this question were discussed in Chapter 2 and should be considered in evaluating the responses. However, if it is assumed that the ambiguity affected the results of various groups in equal ways, the primary question is one related to the interpretation of the actual values. The specific services referred to in the questions concerned (1) diagnostic assessment, (2) case conferences, (3) individual counseling, (4) group counseling, (5) psychological treatment, (6) home visitation, (7) remedial programs, (8) referral to specialists, and (9) miscellaneous or other services. For each of these service areas there were significant differences for comparisons between pupils with and without kindergarten, regardless of the various subgroups compared. In all instances there was a pattern which could be generalized as follows: (1) Those pupils without kindergarten were more likely to come from schools where the service was not available; (2) those pupils with kindergarten were less likely to be identified as needing the services; and (3) pupils without kindergarten were more likely to be identified as needing the service. The pattern concerning whether or not a pupil received the service was somewhat less clear. However, in most instances, those who did not have kindergarten were more likely to have received the service. Most likely, the exceptions may have been the results of the service not being available, which would be consistent with the other patterns.

Completion of difficult task. There were significant differences on all comparisons between pupils with and without kindergarten, with the exception of grade 4 LSES. In all instances, those who had kindergarten were judged to be more likely to complete a difficult task, while those without kindergarten were judged less likely to complete that task.

Summary

When the sample of pupils with kindergarten was compared with those who did not have kindergarten, there were significant differences for all groups on all achievement tests with the exception of second-grade language scores. In all instances the achievement test scores favored those pupils who had kindergarten.

Because a disproportionate number of children without kindergarten (approximately 80%) came from about 18 states, specific analysis was done on achievement test scores from these states. When this was done, the overall picture indicated relatively few significant differences for LSES pupils. There were over 30 comparisons for HSES children that were significant. In each instance, a comparison of HSES pupils in a state where there was a significant difference favored the group with kindergarten. Also, when the total comparisons for HSES pupils were examined by means of sign tests--comparing the number of groups where the mean of those having kindergarten was greater than the mean achievement test scores of those not having kindergarten and vice versa--there were 136 instances where the mean of those with kindergarten was greater than the mean of those without kindergarten, and only 24 where the reverse was true. (This was significant with $p < .001$.) Similar comparisons for LSES groups resulted in no significant results.

If these differences are results of kindergarten rather than socio-economic conditions of the community or other factors, it appears that any positive effects on achievement are much more significant for HSES pupils than for LSES pupils. There appears to be little or no evidence

that could be used to support the theory that LSES pupils with kindergarten do significantly better on achievement tests than those without kindergarten.

In areas involving ordinal and nominal data, responses that were not only significant but large enough to be considered more meaningful than the rest were (1) teachers expected pupils with kindergarten to complete more grades of schooling based upon their estimates of the pupil's attitude; (2) teachers expected pupils with kindergarten to complete more grades of education based upon the teachers' estimates of the pupils' ability; (3) teachers estimated that proportionately more pupils without kindergarten would drop out from school than those identified as having had kindergarten; (4) the overall educational level of head of household for pupils with kindergarten was estimated by teachers to be higher than corresponding groups without kindergarten; (5) the overall educational level of mothers of pupils with kindergarten was estimated by teachers to be more than that of mothers from corresponding groups of pupils without kindergarten; (6) in terms of various services--diagnostic, case conferences, individual counseling, group counseling, psychological treatment, home visitation, remedial programs, referral to specialists, and miscellaneous services--pupils with kindergarten were observed or judged, as a group, to be in less need of service and less likely to have received the service. It also may be meaningful that pupils who had kindergarten, as a whole, were in schools where the services described were more likely to be available.

A major problem with the data is that it deals with families and communities where the pupils were located when the survey was made. We do not know whether their present school systems are the same as those

that they were in when they would normally have been enrolled in kindergarten. Also, it is not known whether the differences in items which relate to economic status, family stability, etc. are a reflection of the communities which offer or do not offer kindergarten programs, or a reflection of the types of families which are likely to send or not send their children to kindergarten.

A general impression that comes from teacher judgments is that when judgments are made concerning educational expectations, the family educational levels, etc., they are usually more favorable for groups of students with kindergarten than for those without it. One question which arises is whether or not the judgments were made before there was a knowledge of whether the child had kindergarten or afterwards. If they were made afterwards, to what extent did the knowledge that a child had or did not have kindergarten influence those judgments?

CHAPTER VI: COMPARISON OF DATA FROM CHILDREN ESTIMATED TO BE EARLY SCHOOL ENTRANTS WITH LATER SCHOOL ENTRANTS

The purpose of this chapter is to examine achievement test scores in reading, mathematics and language for pupils estimated to be early and later school entrants during the year when most pupils appeared to enter a given grade. The estimate of entrance age was based upon the pupil's actual age as of September, 1970. The estimated entrance age was obtained by subtracting two years from the age of second-grade pupils, four years from the age of fourth-grade pupils, and six years from the age of sixth-grade pupils as of September, 1970.

This process clearly revealed a modal year for estimated entrance ages. This year included those pupils whose estimated age at entrance was between 5 years 9 months and 6 years 8 months. 68.8% of all second graders, 66.4% of all fourth graders and 56.3% of all sixth graders were estimated by the above process to have entered school within the age range of 5 years 9 months to 6 years 8 months.

The approximately 10% difference between the fourth and sixth grades in the number of children estimated to have entered school in this modal age range (66% for fourth grade and 56% for sixth grade) could most likely be attributed to two factors. First, there might have been possible changes in entrance trends, and second, there might have been an effect of retention on the estimates. Since there is no data concerning whether or not students have been retained, it is impossible to know which of these two factors contributed most to the differences.

For the purpose of analysis, pupils whose estimated age at entrance was 5 years 9 months, 5 years 10 months and 5 years 11 months were considered to be the younger students during the modal entrance years, while those pupils whose estimated entrance age was 6 years 6 months, 6 years 7 months and 6 years 8 months were considered to be the older pupils entering school during the modal year.

All comparisons were made on the sample as a whole without considering separate subpopulations of HSES or LSES pupils. This was done for two reasons. There is no logical relationship between a child being socio-economically disadvantaged and entering school at a certain age, and pupils' achievement and personality characteristics might have possible effects on teacher estimates of whether or not children were socioeconomically disadvantaged. Thus, if there were differences in achievement between two groups, it might affect the classification.

The data show that 19.8% of grade 2 younger pupils were identified as socioeconomically disadvantaged, while 16.7% of the older ones were identified as such. For grade 4, 16.5% of the younger pupils were identified as socioeconomically disadvantaged while 15% of the older ones were identified as such. Finally, in grade 6, 14.6% of the younger pupils were identified as socioeconomically disadvantaged while 14.7% of the older ones were identified as such. Thus, it can be seen that there were some minor differences in grades 2 and 4 but almost no difference in grade 6.

Two types of data have been reported for subpopulations of younger and older pupils. The first is data concerning comparisons of these groups on standard achievement tests. The second is data obtained from responses to the questions yielding ordinal and nominal types of data.

Comparison of Achievement Test Data for Pupils Classified As Early Entrants and for Those Classified as Later Entrants

This section will examine achievement test data in the areas of reading, mathematics and language for subpopulations from grades 2, 4 and 6. The two subpopulations compared will be pupils identified as early entrants and those identified as later entrants.

Table 6.1 summarizes the combined achievement test scores for younger pupils and older pupils. As is indicated by this table, each comparison of means for younger students and older students was significant ($p < .05$). In all comparisons, the mean for the older students was greater than the mean for the younger students.

Based upon relative developmental differences, one would expect older students as a whole to do better on achievement tests than younger students. However, since the relative magnitude of the differences decrease as students grow older, it would seem reasonable that the magnitude of the differences in achievement test scores might also decrease. Examination indicates that this is not entirely true between the second and fourth grade. However, such a trend would seem to be evident between the second and the sixth grade.

In the second and fourth grade there was a slightly greater percentage of younger students identified as socioeconomically disadvantaged. If these were real differences rather than differences influenced by students' achievement, it could be argued that this had some effect on the comparisons. On the other hand, it seems logically improbable that there should be a true relationship between socioeconomic status and birth dates.

TABLE 21

Achievement Test Scores
Younger Students versus Older Students

Achievement Tests	Younger Students: Sample Size	Younger Students: Number With Test Scores	Younger Students: Mean	Older Students: Sample Size	Older Students: Number With Test Scores	Older Students: Mean	Degrees of Freedom	t	Critical t for $p < .05$
Grade 2									
Reading	3012	783	-.2070	5389	1457	.0619	2238	-5.3256	1.960
Mathematics	3012	475	-.0067	5389	917	.3585	1390	-6.4188	1.960
Language	3012	163	-.1393	5389	317	.1777	478	-2.9186	1.960
Grade 4									
Reading	2889	1369	-.2126	4973	2474	.0308	3841	-7.1427	1.960
Mathematics	2889	1245	-.1605	4973	2286	.0789	3529	-6.6112	1.960
Language	2889	1180	-.1961	4973	2185	.0213	3363	-5.9459	1.960
Grade 6									
Reading	2551	1295	-.0464	4323	2210	.0324	3503	-2.2459	1.960
Mathematics	2551	1275	-.1415	4323	2171	-.0115	3444	-3.6942	1.960
Language	2551	1197	-.0563	4323	2080	.0254	3275	-2.2552	1.960

Regardless of whether or not the achievement test scores of second- and fourth-grade younger students were affected by socioeconomic status, no such argument could be made for the sixth-grade comparisons. The percentage of younger pupils identified as socioeconomically disadvantaged was approximately a tenth of a percent less than the percentage of older students identified as socioeconomically disadvantaged. Thus, if there was a difference related to achievement of sixth-grade younger and older students based upon socioeconomic status, it would favor the younger group. As can be observed from Table 6.1, there were significant differences for the sixth-grade students, all of which favored the older students.

Tables 6.2 through 6.4 provide additional details on individual achievement test scores. All comparisons favored the older students with the one exception of the second-grade language scores for the MAT Primary II test. However, in this instance there were only two younger students with test scores. Thus, the probability of this occurring by chance is extremely high, as is indicated by this very small value of t.

In all, there were 47 comparisons for different tests and for different grades where the mean of the older student group was greater than the mean of the younger students compared. There was only one comparison (involving only two younger students) where the reverse was true. If there were no real differences between the younger and older students it would be expected that there would be approximately as many comparisons favoring younger students as older students. The probability of a chance occurrence of having 47 out of 48 instances favoring one group when there were no real differences is less than 1 in 5 trillion.

TABLE

Reading Scores
Younger Students vs. Older Students

Achievement Tests		Younger Students Sample Size	Younger Students Number With Test Scores	Younger Students Mean	Older Students Sample Size	Older Students Number With Test Scores	Older Students Mean	Degrees of Freedom	t	Critical t for $p < .05$
	Grade 2									
CAT	Lower Primary	93	47	-.3002	155	66	.0482	111	-1.3556	1.982
MAT	Primary I	279	130	.1054	474	231	.2988	359	-1.6436	1.960
MAT	Primary II	61	44	.2417	136	112	.3787	154	-.8851	1.960
SAT	Primary I	487	351	-.3843	804	624	-.0324	973	-4.2396	1.960
	Combined	3012	783	-.2070	5389	1457	.0679	2238	-5.3256	1.960
	Grade 4									
CAT	Upper Primary	67	34	.0220	139	66	.2164	98	-.8346	1.986
CAT	Elementary	100	55	-.1188	155	84	.2060	137	-1.7632	1.960
ITBS	IA Test-Basic Sk.	394	340	-.1284	741	641	.0526	979	-2.7218	1.960
MAT	Elementary	441	156	-.2443	662	273	-.0201	427	-2.4169	1.960
SAT	Primary II	413	271	-.3469	701	483	.0094	752	-4.4028	1.960
SAT	Intermediate I	231	174	-.2623	383	293	-.0306	465	-2.5527	1.960
	Combined	2889	1369	-.2126	4973	2474	.0308	3841	-7.1427	1.960
	Grade 6									
CAT	Elementary	173	113	-.0269	286	161	.1045	272	-1.0370	1.960
ITBS	IA Test-Basic Sk.	362	317	-.0299	716	614	-.0083	929	-.3067	1.960
MAT	Elementary	61	14	-.6121	84	10	-.2664	22	-.6849	2.819
MAT	Intermediate	316	54	-.3291	397	90	-.0786	142	-1.5679	1.960
SAT	Intermediate I	133	76	-.1215	183	101	-.0379	175	-0.5143	1.960
SAT	Intermediate II	423	301	-.1627	708	543	-.0352	842	-1.7666	1.960
	Combined	2551	1295	-.0464	4323	2210	.0324	3503	-2.2459	1.960

TABLE

Mathematics Scores
Younger Students vs. Older Students

Achievement Tests		Younger Students Sample Size	Younger Students Number With Test Scores	Younger Students Mean	Older Students Sample Size	Older Students Number With Test Scores	Older Students Mean	Degrees of Freedom	t	Critical t for $p < .05$
	Grade 2									
CAT	Lower Primary	93	28	-.2384	155	50	.1929	76	-1.5907	1.992
MAT	Primary I	279	98	.4232	474	193	.6192	289	-1.6945	1.960
MAT	Primary II	61	30	.2790	136	86	.4260	114	-1.0055	1.960
SAT	Primary I	487	258	-.1617	804	440	.3140	696	-6.0034	1.960
	Combined	3012	475	-.0067	5389	917	.3585	1390	-6.4188	1.960
	Grade 4									
CAT	Upper Primary	67	25	.1812	139	54	.3103	77	-.4617	1.991
CAT	Elementary	100	52	-.2185	155	82	.3086	132	-2.8181	1.960
ITBS	IA Test-Basic Sk.	394	341	-.0766	741	639	.1150	978	-2.8061	1.960
MAT	Elementary	441	145	-.0906	662	258	.0570	401	-1.3578	1.960
SAT	Primary II	413	224	-.1828	701	404	.1450	626	-3.7554	1.960
SAT	Intermediate I	231	167	-.3676	383	281	-.1616	446	-2.4867	1.960
	Combined	2889	1245	-.1605	4973	2286	.0789	3529	-6.6112	1.960
	Grade 6									
CAT	Elementary	173	113	-.0854	286	159	.1395	270	-1.7792	1.960
ITBS	IA Test-Basic Sk.	362	317	-.1467	716	608	.0570	923	-1.3293	1.960
MAT	Elementary	61	12	-.9045	84	10	-.5397	20	-.7216	2.086
MAT	Intermediate	316	44	-.5260	397	82	-.1157	124	-2.3225	1.960
SAT	Intermediate I	133	74	-.2202	183	100	-.0102	172	-1.3914	1.960
SAT	Intermediate II	432	297	-.2448	708	539	-.0601	834	-2.5645	1.960
	Combined	2551	1275	-.1415	4323	2171	-.0115	3444	-3.6942	1.960

TABLE 6.4

Language Scores
Younger Students vs. Older Students

Achievement Tests		Younger Students Sample Size	Younger Students Number With Test Scores	Younger Students Mean	Older Students Sample Size	Older Students Number With Test Scores	Older Students Mean	Degrees of Freedom	t	Critical t for $p < .05$
	Grade 2									
CAT	Lower Primary	93	25	.0838	155	46	.4956	69	-1.3537	1.995
MAT	Primary I	279	22	.2297	474	42	.3796	62	-.5113	1.999
MAT	Primary II	61	2	.5430	136	11	.3828	11	.2955	2.201
SAT	Primary I	487	86	-.2025	804	154	.1787	238	-2.5391	1.960
	Combined	3012	163	-.1393	5389	317	.1777	478	-2.9186	1.960
	Grade 4									
CAT	Upper Primary	67	32	-.0323	139	59	.2261	89	-1.3103	1.987
CAT	Elementary	100	51	-.1818	155	82	.1362	131	-1.5862	1.960
ITBS	IA Test-Basic Sk.	394	332	-.0801	741	622	.0465	952	-1.9068	1.960
MAT	Elementary	441	141	-.1726	662	258	.1327	397	-2.8586	1.960
SAT	Primary II	413	219	-.2666	701	396	-.0115	613	-2.9611	1.960
SAT	Intermediate I	231	156	-.4520	383	257	-.1803	411	-2.9380	1.960
	Combined	2889	1180	-.1961	4973	2185	.0213	3363	-5.9459	1.960
	Grade 6									
CAT	Elementary	173	111	-.0844	286	153	.1190	262	-1.6194	1.960
ITBS	IA Test-Basic Sk.	362	320	-.0451	716	607	.0600	925	-1.5377	1.960
MAT	Elementary	61	10	-.6759	84	9	-.5809	17	-.1559	2.110
MAT	Intermediate	316	43	-.2754	397	80	-.0908	121	-.9562	1.960
SAT	Intermediate I	133	74	-.1562	183	97	.0522	169	-1.2604	1.960
SAT	Intermediate II	423	281	-.1169	708	524	-.0614	803	-.7102	1.960
	Combined	2551	1197	-.0563	4323	2080	.0254	3275	-2.2552	1.960

Profile Analysis of Nominal and Ordinal Data Comparing Pupils Classified as Early Entrants Versus Those Classified as Late Entrants

Tables 6.5 through 6.9 show the results of a profile analysis using Cattell's pattern similarity index. The items used in the five profile analyses are identical to the items used in the profile analysis of different groups described in Chapter 3.

An examination of these tables indicates that all comparisons of younger and older pupils in the same grade resulted in profiles that were significantly similar at the .01 level. A further examination indicates that the coefficient for grade 2 is less than the coefficient for grade 4, and that of grade 4 is less than the coefficient for grade 6. Thus, there appears to be increasing homogeneity of profiles for the pupils in higher grades.

Tables 6.10 through 6.39 provide response data per thousand for the subpopulations compared. An examination of this descriptive data reveals the high degree of similarity suggested in the profile analysis. However, there are differences which are interesting and which might possibly be expected based upon the age of the pupils and/or their achievement. Such differences include teacher expectations concerning the amount (number of grades) of education pupils are likely to complete based upon (1) attitude and (2) ability. As may be observed in Tables 6.13 and 6.14 the responses of teachers to such items tend to favor the older pupils.

Also, as might be expected, older pupils were indicated to be socially immature less frequently than their younger counterparts. The response information for this item is found in Table 6.15.

TABLE 6.5

Cattell's Pattern Similarity Index (RP)
for
Younger Versus Older

Demographic Items

1	3012	Grade 2	93-95 months
2	5389	Grade 2	102-104 months
3	2889	Grade 4	117-119 months
4	4973	Grade 4	126-128 months
5	2551	Grade 6	141-143 months
6	4323	Grade 6	150-152 months

Groups	Coefficients	P
1, 2	.838	.01
1, 3	.511	.05
1, 4	.404	.10
1, 5	-.006	.10
1, 6	.023	.10
2, 3	.629	.01
2, 4	.642	.01
2, 5	.131	.10
2, 6	.165	.10
3, 4	.913	.01
3, 5	.667	.01
3, 6	.685	.01
4, 6	.684	.01
4, 6	.726	.01
5, 6	.969	.01

TABLE 6.6

Cattell's Pattern Similarity Index (RP)
for
Younger Versus Older

Teacher Judgments Items

1	3012	Grade 2	93-95 months
2	5389	Grade 2	102-104 months
3	2889	Grade 4	117-119 months
4	4973	Grade 4	126-128 months
5	2551	Grade 6	141-143 months
6	4323	Grade 6	150-152 months

Groups	Coefficients	P
1, 2	.601	.01
1, 3	.837	.01
1, 4	.486	.05
1, 5	.497	.05
1, 6	.471	.05
2, 3	.855	.01
2, 4	.967	.01
2, 5	.919	.01
2, 6	.953	.01
3, 4	.801	.01
3, 5	.815	.01
3, 6	.769	.01
4, 5	.975	.01
4, 6	.983	.01
5, 6	.950	.01

TABLE 6.7

Cattell's Pattern Similarity Index (RP)
for
Younger Versus Older

Teacher Observations Items

1	3012	Grade 2	93-95 months
2	5389	Grade 2	102-104 months
3	2889	Grade 4	117-119 months
4	4973	Grade 4	126-128 months
5	2551	Grade 6	141-143 months
6	4323	Grade 6	150-152 months

Groups	Coefficients	P
1, 2	.857	.01
1, 3	.941	.01
1, 4	.889	.01
1, 5	.800	.01
1, 6	.765	.01
2, 3	.869	.01
2, 4	.941	.01
2, 5	.767	.01
2, 6	.843	.01
3, 4	.951	.01
3, 5	.907	.01
3, 6	.870	.01
4, 5	.893	.01
4, 6	.925	.01
5, 6	.960	.01

TABLE 6.8

Cattell's Pattern Similarity Index (RP)
for
Younger Versus Older

Teacher Judgments Items and Teacher Observations Items

1	3012	Grade 2	93-95 months
2	5389	Grade 2	102-104 months
3	2889	Grade 4	117-119 months
4	4973	Grade 4	126-128 months
5	2551	Grade 6	141-143 months
6	4323	Grade 6	150-152 months

Groups	Coefficients	P
1, 2	.720	.01
1, 3	.866	.01
1, 4	.608	.01
1, 5	.598	.01
1, 6	.594	.01
2, 3	.885	.01
2, 4	.955	.01
2, 5	.883	.01
2, 6	.930	.01
3, 4	.859	.01
3, 5	.869	.01
3, 6	.842	.01
4, 5	.958	.01
4, 6	.985	.01
5, 6	.959	.01

TABLE 6.9

Cattell's Pattern Similarity Index (RP)
for
Younger Versus Older

Demographic, Teacher Judgments, and Teacher Observation Items

1	3012	Grade 2	93-95 months
2	5389	Grade 2	102-104 months
3	2889	Grade 4	117-119 months
4	4973	Grade 4	126-128 months
5	2551	Grade 6	141-143 months
6	4323	Grade 6	150-152 months

Groups	Coefficients	P
1, 2	.783	.01
1, 3	.792	.01
1, 4	.629	.01
1, 5	.436	.01
1, 6	.429	.01
2, 3	.812	.01
2, 4	.872	.01
2, 5	.604	.01
2, 6	.635	.01
3, 4	.899	.01
3, 5	.824	.01
3, 6	.792	.01
4, 5	.877	.01
4, 6	.892	.01
5, 6	.967	.01

TABLE 6.10

Response Per Thousand For Subpopulations

Question 7 Byte 37

7.37 Since the beginning of the first grade how many schools, including this school, has this pupil attended? (Do not include summer schools or schools that normally feed pupils into this school; include schools in this district as well as outside of this district.)

0 = ERROR
1 = (1)
2 = (2-3)
3 = (4-6)
4 = (7-10)
5 = (More than 10)
6 = (Don't Know)

N	Subpopulations	Responses 0	1	2	3	4	5	6	7	8
3012	G2 Younger	007	726	252	007	000	000	007		
5389	G2 Older	007	719	258	007	000	000	009		
2889	G4 Younger	008	557	378	038	001	001	017		
4973	G4 Older	008	564	366	047	001	000	014		
2551	G6 Younger	007	445	440	074	007	001	025		
4323	G6 Older	009	459	417	080	007	000	026		

TABLE 6.11

Response Per Thousand For Subpopulations

Question 7 Byte 38

7.38 This pupil had experience in kindergarten before entering first grade.

0 = ERROR
1 = Yes
2 = No
3 = Don't Know

N	Subpopulations	Responses 0	1	2	3	4	5	6	7	8
3012	G2 Younger	047	690	167	096					
5389	G2 Older	064	699	155	082					
2889	G4 Younger	037	666	171	126					
4973	G4 Older	043	653	182	123					
2551	G6 Younger	025	606	221	149					
4323	G6 Older	022	616	214	149					

TABLE 6.12

Response Per Thousand for Subpopulations

Question 7 Byte 39

7.39 This student had experience in preschool programs.

0 = ERROR
1 = Yes
2 = No
3 = Don't Know

N	Subpopulations	Responses 0	1	2	3	4	5	6	7	8
3012	G2 Younger	259	178	306	257					
5389	G2 Older	266	188	295	251					
2889	G4 Younger	284	118	310	288					
4973	G4 Older	275	124	295	305					
2551	G6 Younger	274	046	368	312					
4323	G6 Older	273	049	368	310					

TABLE 6.13

Response Per Thousand For Subpopulations

Question 9 Byte 40

9.40 Considering his present attitude, how far do you think this pupil will go in school. NOTE: Consider only this pupil's attitude, not financial or family problems.

0 = ERROR
1 = 8th grade or less
2 = 9th grade or further, but not high school graduation
3 = Graduate from high school
4 = Post high school education except college
5 = Enter college

N	Subpopulations	Responses 0	1	2	3	4	5	6	7	8
3012	G2 Younger	007	044	112	373	065	399			
5389	G2 Older	005	033	087	342	071	462			
2889	G4 Younger	004	025	102	372	074	423			
4973	G4 Older	002	022	096	329	069	483			
2551	G6 Younger	001	009	085	350	073	482			
4323	G6 Older	005	016	080	349	071	478			

TABLE 6.14

Response Per Thousand for Subpopulations

Question 10 Byte 41

10.41 Considering his ability, how far do you think this pupil could go in school? NOTE: Ability refers to your observation of the pupil's scholastic potential.

0 = ERROR
1 = 8th grade or less
2 = 9th grade or further, but not high school graduation
3 = Graduate from high school
4 = Post high school education except college
5 = Enter college

N	Subpopulations	Responses 0	1	2	3	4	5	6	7	8
3012	G2 Younger	006	035	079	284	102	494			
5389	G2 Older	004	024	061	240	098	573			
2889	G4 Younger	004	019	071	282	103	520			
4873	G4 Older	004	019	061	235	100	581			
2551	G6 Younger	002	009	067	252	112	558			
4323	G6 Older	004	015	048	244	106	583			

TABLE 6.15

Response Per Thousand For Subpopulations

Question 11 Byte 54

11.54 Anti-Social Behavior creates a persistent problem for this pupil.

1 = Unmarked 2 = Marked

N	Subpopulations	Responses 0	1	2	3	4	5	6	7	8
3012	G2 Younger		950	050						
5389	G2 Older		945	055						
2889	G4 Younger		949	051						
4973	G4 Older		947	053						
2551	G6 Younger		950	050						
4323	G6 Older		950	050						

TABLE 6.16

Response Per Thousand for Subpopulations

Question 11 Byte 55

11.55 Malnutrition creates a persistent problem for this pupil.

1 = Unmarked 2 = Marked

N	Subpopulations	Responses 0	1	2	3	4	5	6	7	8
3012	G2 Younger		991	009						
5389	G2 Older		993	007						
2889	G4 Younger		996	004						
4973	G4 Older		995	005						
2551	G6 Younger		995	005						
4323	G6 Older		995	005						

TABLE 6.17

Response Per Thousand For Subpopulations

Question 11 Byte 52

11.52 Persistent problem confronted by the pupil: Social Immaturity.

1 = Unmarked 2 = Marked

N Subpopulations	Responses 0	1	2	3	4	5	6	7	8
3012 G2 Younger		816	184						
5389 G2 Older		889	111						
2889 G4 Younger		846	154						
4873 G4 Older		891	109						
2551 G6 Younger		873	127						
4323 G6 Older		890	110						

TABLE 6.18

Response Per Thousand for Subpopulations

Question 11 Byte 53

11.53 Emotional problems create a persistent problem for this pupil.

1 = Unmarked 2 = Marked

N Subpopulations	Responses 0	1	2	3	4	5	6	7	8
3012 G2 Younger		895	105						
5389 G2 Older		898	102						
2889 G4 Younger		886	114						
4973 G4 Older		889	101						
2551 G6 Younger		898	102						
4323 G6 Older		901	099						

TABLE 6.19

Response Per Thousand For Subpopulations

Question 11 Byte 56

11.56 Family instability creates a persistent problem for this pupil.

1 = Unmarked 2 = Marked

N Subpopulations	Responses 0	1	2	3	4	5	6	7	8
3012 G2 Younger		872	128						
5389 G2 Older		882	118						
2889 G4 Younger		892	108						
4973 G4 Older		897	103						
2551 G6 Younger		905	095						
4323 G6 Older		935	065						

TABLE 6.20

Response Per Thousand for Subpopulations

Question 11 Byte 60

11.60 This pupil is socioeconomically disadvantaged.

1 = Unmarked 2 = Marked

N Subpopulations	Responses 0	1	2	3	4	5	6	7	8
3012 G2 Younger		802	198						
5389 G2 Older		833	167						
2889 G4 Younger		835	165						
4973 G4 Older		850	150						
2551 G6 Younger		854	146						
4323 G6 Older		853	147						

TABLE 6.21

Response Per Thousand For Subpopulations

Question 12 Byte 63

12.63 Should this pupil be classified as being a potential dropout?

1 = Unmarked 2 = Marked

N	Subpopulations	Responses 0	1	2	3	4	5	6	7	8
3012	G2 Younger		932	068						
5389	G2 Older		943	059						
2889	G4 Younger		944	056						
4973	G4 Older		940	060						
2551	G6 Younger		943	057						
4323	G6 Older		935	065						

TABLE 6.22

Response Per Thousand for Subpopulations

Question 12 Byte 66

12.66 Should this pupil be classified as being a neglected or delinquent pupil?

1 = Unmarked 2 = Marked

N	Subpopulations	Responses 0	1	2	3	4	5	6	7	8
3012	G2 Younger		977	023						
5389	G2 Older		981	019						
2889	G4 Younger		987	013						
4973	G4 Older		987	013						
2551	G6 Younger		989	011						
4323	G6 Older		985	015						

TABLE 6.23

Response Per Thousand For Subpopulations

Question 13 Byte 69

13.69 Indicate below if this pupil is a member of any of the following racial or national origin groups.

1 = American Indian
2 = Negro
3 = Oriental
4 = Spanish-surnamed American (persons of Cuban, Mexican, or Puerto Rican descent)
5 = None of the above

N Subpopulations	Responses 0	1	2	3	4	5	6	7	8
3012 G2 Younger	015	003	297	019	100	566			
5389 G2 Older	017	005	260	011	080	627			
2889 G4 Younger	016	002	289	022	070	601			
4973 G4 Older	019	003	241	016	066	654			
2551 G6 Younger	011	003	269	022	049	646			
4323 G6 Older	016	004	242	016	052	670			

TABLE 6.24

Response Per Thousand for Subpopulations

Question 19 Byte 75

19.75 What is the relationship of the head of this pupil's household to this pupil?

1 = Father
2 = Mother
3 = Uncle
4 = Aunt
5 = Grandparent
6 = Older brother or sister
7 = Other
8 = Don't Know

N Subpopulations	Responses 0	1	2	3	4	5	6	7	8
3012 G2 Younger	019	773	148	001	003	016	000	023	017
5389 G2 Older	020	782	145	002	002	016	000	023	008
2889 G4 Younger	026	780	142	001	003	013	001	019	015
4973 G4 Older	022	786	141	002	001	014	001	024	009
2551 G6 Younger	020	803	135	001	002	012	002	021	006
4323 G6 Older	017	791	138	003	003	014	000	025	008

TABLE 6.25

Response Per Thousand For Subpopulations

Question 20 Byte 76

20.76 Is this pupil's family receiving welfare payments?

1 = Yes 2 = No 3 = Don't Know

N	Subpopulations	Responses 0	1	2	3	4	5	6	7	8
3012	G2 Younger	019	102	702	177					
5389	G2 Older	019	096	748	137					
2889	G4 Younger	022	087	749	141					
4973	G4 Older	022	080	779	119					
2551	G6 Younger	022	071	792	115					
4323	G6 Older	024	071	791	114					

TABLE 6.26

Response Per Thousand for Subpopulations

Question 20 Byte 77

20.77 Indicate the usual employment status of the head of this pupil's household.

0 = ERROR
1 = Regularly employed
2 = Seasonally employed
3 = Chronically unemployed
4 = Don't Know

N	Subpopulations	Responses 0	1	2	3	4	5	6	7	8
3012	G2 Younger	036	743	027	039	155				
5389	G2 Older	037	783	025	035	119				
2889	G4 Younger	034	786	027	037	116				
4973	G4 Older	035	809	023	037	096				
2551	G6 Younger	038	810	021	031	100				
4323	G6 Older	031	817	023	034	095				

TABLE 6.27

Response Per Thousand For Subpopulations

Question 22 Byte 80

22.80 Is this pupil's mother employed?

0 = ERROR
1 = Mother is deceased
2 = No mother in the home
3 = Yes, part-time or seasonal work
4 = Yes, full-time or steady w
5 = No
6 = Don't Know

N Subpopulations	Responses 0	1	2	3	4	5	6	7	8
3012 G2 Younger	011	004	110	123	253	417	083		
5389 G2 Older	011	007	102	112	246	454	070		
2889 G4 Younger	010	007	122	106	262	405	087		
4973 G4 Older	012	009	094	122	268	420	076		
2551 G6 Younger	008	008	104	132	265	390	094		
4323 G6 Older	007	012	107	111	292	379	093		

TABLE 6.28

Response Per Thousand for Subpopulations

Question 26 Byte 89

26.89 Estimate the educational level of the head of this pupil's household.

0 = ERROR
1 = Little or no education
2 = Probably completed grade school
3 = Probably some high school
4 = Probably completed high school
5 = Probably some post high sc training but not college
6 = Probably some college
7 = Probably completed college
8 = Probably some graduate sch education

N Subpopulations	Responses 0	1	2	3	4	5	6	7	8
3012 G2 Younger	148	040	113	163	275	076	063	074	048
5389 G2 Older	138	035	094	184	350	050	085	053	012
2889 G4 Younger	140	028	091	188	266	069	081	082	055
4973 G4 Older	139	034	093	166	267	078	085	090	048
2551 G6 Younger	124	026	096	166	287	076	082	092	051
4323 G6 Older	129	029	096	171	293	077	075	083	047

TABLE 6.29

Response Per Thousand For Subpopulations

Question 26 Byte 90

26.90 Estimate the educational levels of this pupil's mother.

0 = ERROR
1 = Little or no education
2 = Probably completed grade school
3 = Probably some high school
4 = Probably completed high school
5 = Probably some post high school training but not college
6 = Probably some college
7 = Probably completed college
8 = Probably some graduate school education

N Subpopulations	Responses 0	1	2	3	4	5	6	7	8
3012 G2 Younger	140	041	110	195	326	048	072	057	011
5389 G2 Older	138	035	094	184	350	050	085	053	012
2889 G4 Younger	127	027	094	205	342	047	076	062	019
4873 G4 Older	127	029	088	181	345	058	089	068	015
2551 G6 Younger	124	026	089	182	361	059	078	064	017
4323 G6 Older	128	027	080	181	370	050	081	067	015

TABLE 6.30

Response Per Thousand for Subpopulations

Question 39 Byte 199

39.199 Diagnostic assessment of academic, social, or emotional programs.

0 = ERROR
1 = Pupil received service
2 = Pupil needed service
3 = Pupil did not need service
4 = Activity not available

N Subpopulations	Responses 0	1	2	3	4	5	6	7	8
3012 G2 Younger	063	142	071	603	121				
5389 G2 Older	054	129	057	644	117				
2889 G4 Younger	056	174	065	598	107				
4973 G4 Older	055	164	060	616	106				
2551 G6 Younger	052	205	060	568	114				
4323 G6 Older	051	191	055	576	127				

TABLE 6.31

Response Per Thousand For Subpopulations

Question 39 Byte 200

39.200 Case conference with teacher and other school personnel regarding problems of this pupil.

0 = ERROR
1 = Pupil received service
2 = Pupil needed service
3 = Pupil did not need service
4 = Activity not available

N	Subpopulations	Responses 0	1	2	3	4	5	6	7	8
3012	G2 Younger	066	140	055	684	056				
5389	G2 Older	057	126	042	719	057				
2889	G4 Younger	057	138	051	703	051				
4973	G4 Older	055	120	053	723	049				
2551	G6 Younger	051	146	052	697	053				
4323	G6 Older	053	130	053	715	050				

TABLE 6.32

Response Per Thousand for Subpopulations

Question 39 Byte 201

39.201 Individual counseling.

0 = ERROR
1 = Pupil received service
2 = Pupil needed service
3 = Pupil did not need service
4 = Activity not available

N	Subpopulations	Responses 0	1	2	3	4	5	6	7	8
3012	G2 Younger	063	098	066	658	114				
5389	G2 Older	058	096	051	683	112				
2889	G4 Younger	061	117	060	649	114				
4973	G4 Older	058	114	062	654	112				
2551	G6 Younger	054	144	068	614	119				
4323	G6 Older	052	148	059	622	119				

TABLE 6.33

Response Per Thousand For Subpopulations

Question 39 Byte 202

39.202 Group counseling.

0 = ERROR
1 = Pupil received service
2 = Pupil needed service
3 = Pupil did not need service
4 = Activity not available

N Subpopulations	Responses 0	1	2	3	4	5	6	7	8
3012 G2 Younger	073	049	028	673	177				
5389 G2 Older	063	051	022	684	179				
2889 G4 Younger	069	058	026	656	192				
4973 G4 Older	064	064	030	659	183				
2551 G6 Younger	060	097	038	609	197				
4323 G6 Older	054	100	031	623	192				

TABLE 6.34

Response Per Thousand for Subpopulations

Question 39 Byte 203

39.203 Psychological treatment activity.

0 = ERROR
1 = Pupil received service
2 = Pupil needed service
3 = Pupil did not need service
4 = Activity not available

N Subpopulations	Responses 0	1	2	3	4	5	6	7	8
3012 G2 Younger	079	010	039	733	138				
5389 G2 Older	069	011	029	763	128				
2889 G4 Younger	071	008	035	751	135				
4973 G4 Older	073	009	028	763	127				
2551 G6 Younger	061	006	031	760	143				
4323 G6 Older	059	006	032	766	137				

TABLE 6.35

Response Per Thousand For Subpopulations

Question 39 Byte 204

39.204 Home visitation activity.

0 = ERROR
1 = Pupil received service
2 = Pupil needed service
3 = Pupil did not need service
4 = Activity not available

N	Subpopulations	Responses 0	1	2	3	4	5	6	7	8
3012	G2 Younger	078	056	044	761	060				
5389	G2 Older	074	048	034	784	060				
2889	G4 Younger	079	043	039	781	059				
4973	G4 Older	073	049	038	782	059				
2551	G6 Younger	071	045	039	781	064				
4323	G6 Older	063	037	033	812	055				

TABLE 6.36

Response Per Thousand for Subpopulations

Question 39 Byte 205

39.205 Remedial program carried out cooperatively with teacher.

0 = ERROR
1 = Pupil received service
2 = Pupil needed service
3 = Pupil did not need service
4 = Activity not available

N	Subpopulations	0	1	2	3	4	5	6	7	8
3012	G2 Younger	059	120	076	640	104				
5389	G2 Older	058	107	051	687	096				
2889	G4 Younger	062	126	067	654	091				
4973	G4 Older	063	104	054	687	092				
2551	G6 Younger	054	107	065	682	091				
4323	G6 Older	056	091	059	693	101				

TABLE 6.37

Response Per Thousand For Subpopulations

Question 39 Byte 206

39.206 Referral to specialist or agency outside the school.

0 = ERROR
1 = Pupil received service
2 = Pupil needed service
3 = Pupil did not need service
4 = Activity not available

N	Subpopulations	0	1	2	3	4	5	6	7	8
3012	G2 Younger	066	032	036	802	064				
5389	G2 Older	063	031	027	814	065				
2889	G4 Younger	062	126	067	654	091				
4973	G4 Older	063	104	054	687	092				
2551	G6 Younger	060	024	030	819	067				
4323	G6 Older	062	022	030	819	067				

TABLE 6.38

Response Per Thousand for Subpopulations

Question 39 Byte 207

39.207 Other activity.

0 = ERROR
1 = Pupil received service
2 = Pupil needed service
3 = Pupil did not need service
4 = Activity not available

		Responses								
N	Subpopulations	0	1	2	3	4	5	6	7	8
3012	G2 Younger	224	019	014	678	064				
5389	G2 Older	205	020	012	696	067				
2889	G4 Younger	204	018	012	693	074				
4973	G4 Older	202	017	014	695	071				
2551	G6 Younger	221	018	016	672	073				
4323	G6 Older	211	019	016	682	071				

TABLE 6.39

Response Per Thousand For Subpopulations

Question 42 Byte 235

42.235 If this pupil is given a difficult task to complete on his own, he usually:

0 = ERROR
1 = Gives up without trying
2 = Starts the problem, but gives up rapidly
3 = Persists for some time, but does not complete the task
4 = Completes the task that was assigned

N Subpopulations	Responses 0	1	2	3	4	5	6	7	8
3012 G2 Younger	019	057	156	222	545				
5389 G2 Older	015	034	116	186	649				
2889 G4 Younger	016	052	148	218	566				
4973 G4 Older	014	040	116	194	635				
2551 G6 Younger	020	040	121	202	616				
4323 G6 Older	014	036	121	185	644				

Tables 6.31 through 6.38 relate to special services that pupils might need. In 23 out of 24 comparisons there were fewer older than younger pupils indicated to need a particular service. In the other comparison there were equal numbers indicated not to need a service. In most instances the differences might not be considered meaningful; however, the probability of a chance occurrence of 23 out of 24 comparisons favoring the older students is less than 1 in 600,000.

Table 6.39 indicates how pupils relate to difficult tasks. As can be seen from the data in the table, the older pupils in a grade in all instances are more likely than the younger students to complete a difficult task that has been assigned. However, the relative differences become fewer as the pupils complete more grades of school.

Summary

An examination of achievement test data indicates that those pupils classified as older were more likely to score higher on achievement tests than those classified as younger pupils. This was true regardless of grade or area tested or the particular achievement test used, with one exception. This exception involved an extremely small sample of younger pupils (2).

There were significant differences, regardless of grade levels compared. However, these differences became less in absolute magnitude as pupils completed more grades of school.

All of the profile analyses indicate high degrees of similarity between younger and older pupils in the same grade with increasing similarity for

pupils in higher grades. Differences revealed by descriptive data that appeared to be most meaningful were related to teacher expectations based upon pupil ability and attitude. Teachers (1) expected older pupils to complete more grades of school; (2) judged fewer older students to be socially immature; (3) indicated that more older students did not need special services, and (4) considered older students more likely than their younger counterparts in the same grade to complete a difficult task when it was assigned.

CHAPTER VII: LIMITATIONS, SUMMARY AND RECOMMENDATIONS

There were many problems with the data used in this study. Because of the scope of these problems it is not appropriate to make a summary statement without including a discussion of the major problems with the data and suggestions as to how similar surveys might obtain more accurate data.

This concluding chapter first describes the major limitations of the data. Second, it summarizes the relationships significant to this report which were observed and notes others which were not observed. Then recommendations are made for improving the quality of the data if similar surveys are made in the future.

Chapters 3, 4, 5 and 6 all have summary sections which give more details than this final summary. The reader may find it helpful to review these previous summary sections in conjunction with this chapter.

Limitations

The major limitation of any nonexperimental study is that it is practically impossible to establish cause-effect relationships; however, it is possible to talk about relationships between variables without indicating cause or effect. In addition to this obvious limitation, this section will discuss problems with the data which raise questions concerning whether relationships observed were a function of the population

or of other factors such as the manner in which the data was collected, missing data, etc.

Missing data.

The problem of missing data is described in greater detail in Chapters 1 and 2. This problem was most notable in relation to achievement test scores. Groups which were affected most by this problem were those groups of pupils identified as socioeconomically disadvantaged. These groups frequently contained the smallest number of individuals, which resulted in greatly reducing already small samples.

Multiple achievement test scores.

It was possible to indicate that a pupil had taken 1 of 19 different achievement tests, or had taken another nonlisted achievement test. For a given grade this meant that there were 4 or 5 major achievement tests and/or forms that a pupil might have taken. There was no way to establish any similarity of norming procedures or interpretation of equivalent scores on different tests. Because of this limitation two types of analysis were done. The first treated all tests as though the scores had similar meaning. The second examined results of subgroups which had taken the same test. The latter procedure, however, greatly reduced the samples being compared.

It was not possible to use the results of the Anchor Report because it dealt with test versions which were dated later than those used in this survey.

Lack of retention data.

There was no information concerning whether a pupil had repeated one or more grades. This meant that birth dates provided only estimates of the year when a pupil began the first grade.

Preschool versus no preschool.

The only information provided concerning preschool was whether or not a pupil had a preschool experience. There was no information to indicate what type of experience a pupil had.

Socioeconomically disadvantaged.

One item asked the teacher to judge whether or not the pupil was "socioeconomically disadvantaged." This judgment was based upon a pupil's present status. There was no way to determine if that status (the judgment of the teacher) would have been the same at the time that a pupil began school or had a preschool or kindergarten experience.

The change of apparent socioeconomic status (possibly as the result of earlier experiences) could allow for a variety of interpretations of the data. This is discussed in greater detail in previous chapters.

Kindergarten versus no kindergarten.

Whether or not a pupil had kindergarten was indicated; however, there was no information that would give any clues as to why a pupil did or did not have kindergarten. Approximately 80% of the pupils without kindergarten came from about 18 states. A majority of these were southern states. This could suggest that pupils' attendance at kindergarten was a function of

where they were located. But there was no data to indicate whether or not their present location was the same as when they attended kindergarten. Thus, at best the data may suggest but not establish reasons why pupils did or did not have kindergarten experiences.

Summary

This section will describe only the most obvious relationships or lack of relationships. The detailed information appears in individual chapters and in their summaries.

Differences between pupils identified as socioeconomically disadvantaged and other pupils.

The most marked differences between any subgroups were between those identified as socioeconomically disadvantaged and those not identified as such. This was true of achievement test scores and of other characteristics. In no instance did factors such as having or not having kindergarten or having or not having preschool approach the magnitude of differences found between pupils identified as socioeconomically disadvantaged or not socioeconomically disadvantaged. In fact, those identified as not socioeconomically disadvantaged and not having preschool or kindergarten were always meaningfully ahead in achievement and other characteristics than groups identified as socioeconomically disadvantaged and having preschool or kindergarten.

Preschool versus no preschool.

In the majority of comparisons made, there were no significant differences between groups with preschool and those without preschool.

The one major exception was sixth-grade pupils identified as not socioeconomically disadvantaged; however, there were population characteristics that suggested these pupils were more advantaged than their counterparts without preschool. These indicators are discussed in greater detail in Chapter 4.

Kindergarten versus no kindergarten.

When the sample was considered as a national sample there were significant differences between pupils with kindergarten and without kindergarten. In almost all instances, these differences favored the group that had kindergarten; however, a majority of pupils without kindergarten (approximately 80%) came from 18 states. Thus, further analysis was done to determine whether the differences would be maintained for comparisons within states.

In general, when state-by-state comparisons were made there was no significant difference between socioeconomically disadvantaged pupils that had kindergarten and those that did not. However, there were slight but significant differences in many states between pupils identified as not being socioeconomically disadvantaged. In almost all instances these differences favored pupils who had kindergarten, but there was no information available to indicate why some pupils had kindergarten and others did not. Also, there were factors which could influence achievement that might have been the results of having or not having kindergarten, or they might have existed prior to kindergarten attendance.

If the differences observed are to be attributed to having or not having kindergarten, it would appear that any advantages obtained from

kindergarten were of greater benefit to pupils not identified as socio-economically disadvantaged.

School entrance laws versus estimated entrance ages.

There was no evidence to indicate that pupils coming from states with entrance laws requiring earlier mandatory attendance began school at an earlier age than pupils coming from states where the entrance laws allow for later entrance. In all instances the differences were minor, suggesting that social expectations concerning age of school entrance is perhaps the greatest factor affecting the time for beginning formal attendance at school.

States with the earliest average estimated entrance age were those which had a mandatory entrance age of 8. This was followed by states where the entrance age was 6; and finally states having an entrance age law of 7 had pupils with the youngest estimated entrance ages. In most instances the total mean variation was within 3 months. Tables illustrating this and detailed discussion are found in Chapter 2.

Achievement of younger versus older pupils.

There was an obvious modal year when most pupils began the first grade. Based upon their age as of September, 1970, most children began school between the ages of 5 years 9 months and 6 years 8 months. Comparison of the pupils from this year indicated that pupils whose estimated entrance ages were 6 years 6 months, 6 years 8 months and 6 years 9 months were always significantly ahead of pupils whose estimated entrance ages were 5 years 9 months, 5 years 10 months and 5 years 11 months. The

magnitude of the differences tended to decrease as pupils completed more grades. This is the pattern that would be expected from relative differences in individual development related to age.

Recommendations

There are three major recommendations which would be appropriate for similar surveys in the future. First, data could be collected which would provide information concerning whether or not a pupil skipped a grade or was retained in one or more grades. Second, information from the Anchor Report could be used to develop a comparable achievement test score in reading, mathematics and language so that separate comparisons of groups having different tests need not be made. Even preferable to this would be the use of a standard achievement test battery administered to all pupils in the survey.

The third recommendation would be to clarify the wording in a number of the items in the survey instrument. Clarification would be especially valuable for items requesting information as to whether or not a pupil had or needed particular services. The four responses to these types of items were not discrete and nonoverlapping, thus resulting in ambiguity concerning the teachers' interpretation of the items. In addition to these specific recommendations, there are a number of problems pointed out in previous chapters indicating needed adjustments in the instruments or the procedures which would generate more accurate data in future surveys of this type.

Conclusions

It is difficult to draw major conclusions because of the problems with the data; however, it does seem appropriate to suggest the following:

First, if kindergarten or preschool is making a difference in later school achievement, it appears to have greater benefit for pupils not identified as socioeconomically disadvantaged.

Second, differences which might be attributed to preschool or kindergarten appear to be minimal compared to differences which might be attributed to socioeconomic status.

Third, if there are positive benefits from preschool for HSES or LSES pupils or kindergarten for LSES pupils, they do not seem to be of sufficient magnitude in most instances to overcome the masking effect that may be the result of other factors. If the benefit of such programs were strong enough, it would seem that differences between subpopulations with and without kindergarten or subpopulations with and without preschool would have been greater.

Third, if there are positive benefits from preschool or kindergarten, they do not seem to be of sufficient magnitude in most instances to overcome the masking effect that may be the result of other factors. If the benefit of such programs were strong enough, it would seem that differences between subpopulations with and without kindergarten or subpopulations with and without preschool would have been greater.

Fourth, there appear to be significant differences between the achievement of those groups of pupils identified as younger and those groups of pupils identified as older. In all instances, the advantage favored those pupils identified as older; however, the advantages were reduced in magnitude as the groups of pupils had more years of schooling. This is the type of result that would be expected, based upon the reduced relative developmental differences as pupils increase in age.

In general it appears that the most meaningful differences relate to family and socioeconomic status rather than to specific school programs, provided there is a minimal level of school experience. This is consistent with the general findings of the Coleman report. The overall data would seem to support the need for programs that not only focus on children, but on their families.

The apparently greater benefit of early programs for pupils not socioeconomically disadvantaged suggests the need for a careful study of the interaction between early school and preschool curriculums and the development of the pupils involved. Programs which may be appropriate and beneficial to upper- and middle-class children could possibly have minimal or even negative benefit to LSES or disadvantaged children.

An overconcern that disadvantaged pupils learn certain tasks at an early age may result in attempting to teach these tasks before the children are developmentally ready. This could result in convincing them that they are not able to succeed; thus, when they are developmentally ready to achieve, they may have become convinced that they cannot do it and may be less likely to try.

This should in no way be interpreted to suggest that less attention should be given to disadvantaged children, but rather that a more careful study should be given to the type of programs that benefit disadvantaged pupils. A greater emphasis should be placed on coordinating these programs for children with programs that will benefit and strengthen their families.

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